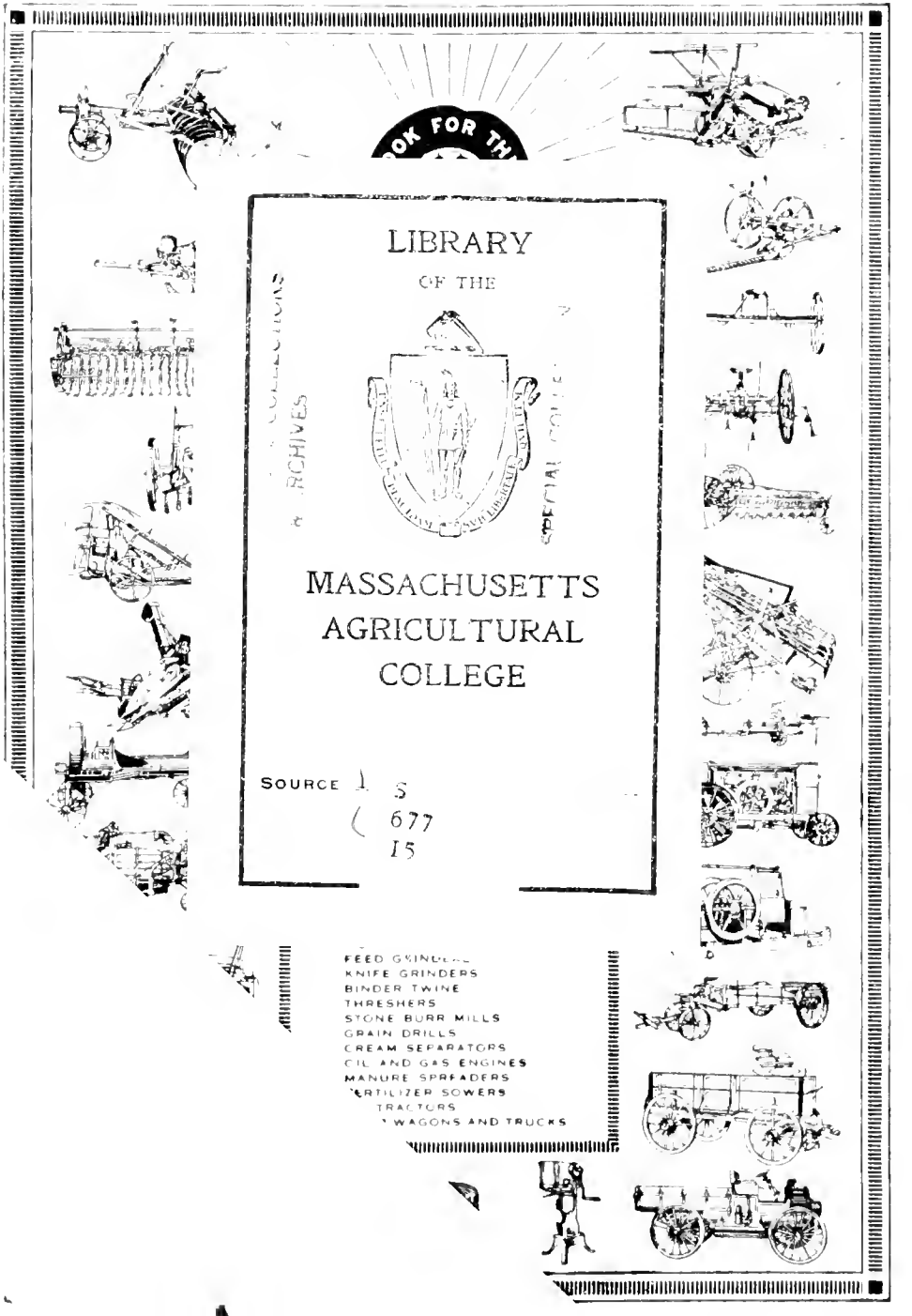
INTERNATIONAL HARVESTER

TRADE MARK

CATALOGUES



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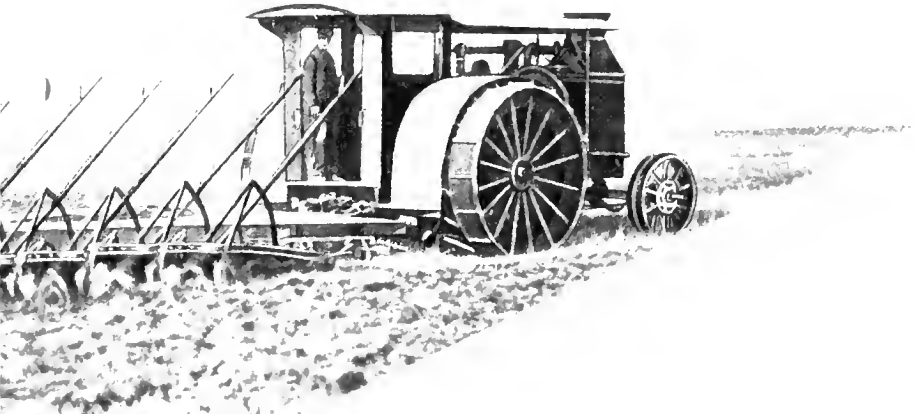
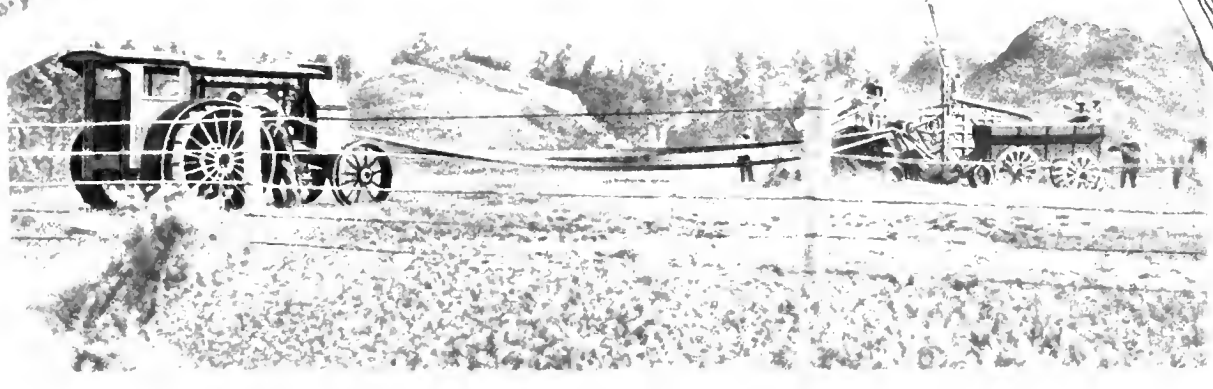
INTERN OF AMERICA

MOGUL OIL TRACTORS





BRANCH HOUSES
INTERNATIONAL HARVESTER COMPANY OF AMERICA
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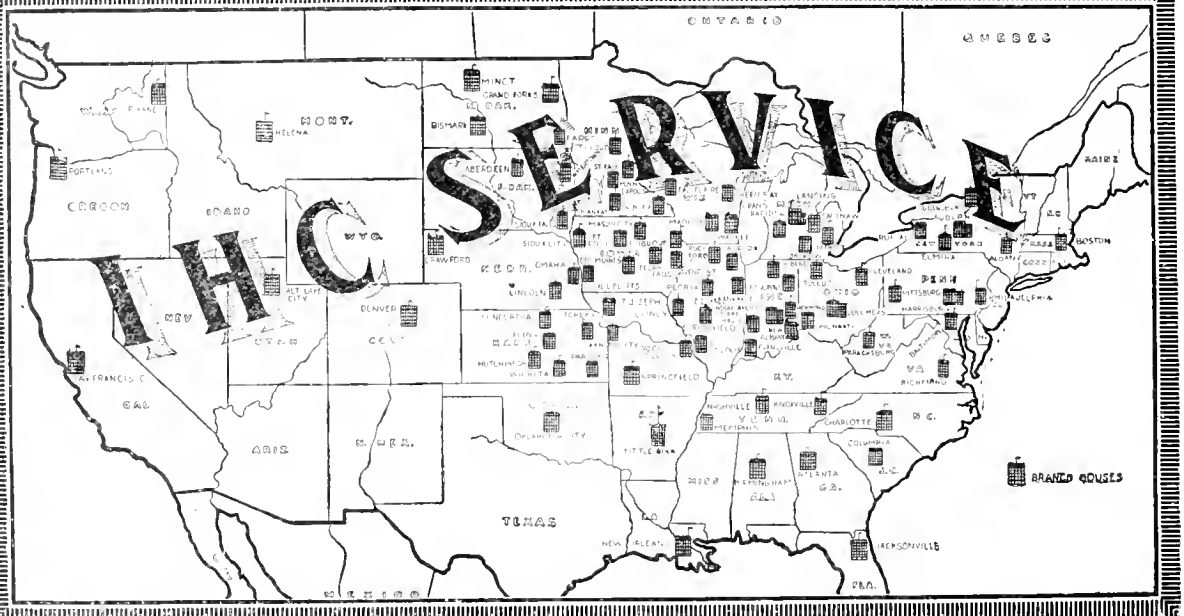

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AUBURN N. Y
AURORA, ILL.
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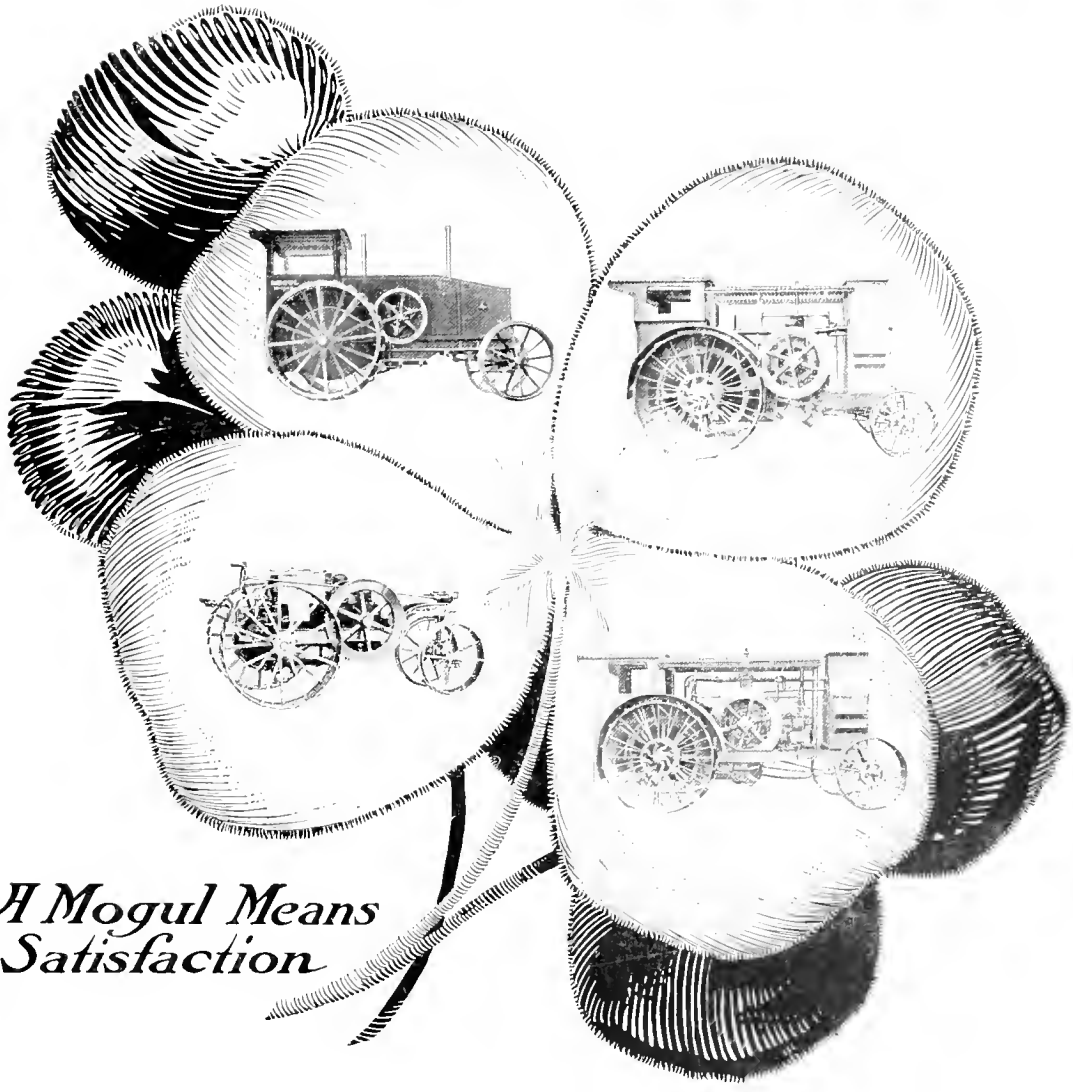
INTERNATIONAL HARVESTER

MOGUL
OIL TRACTORS



A Mogul Means Satisfaction

INTERNATIONAL HARVESTER COMPANY OF AMERICA
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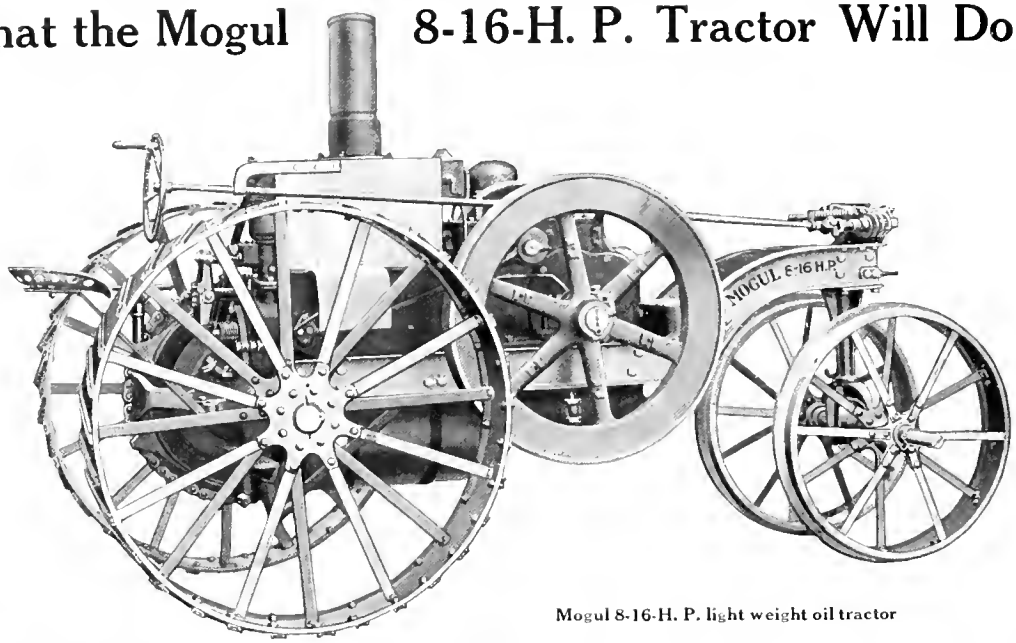
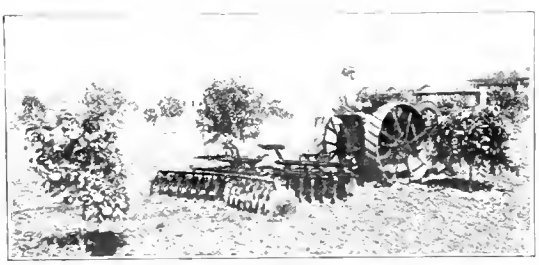
MOGUL

What the Mogul 8-16-H. P. Tractor Will Do



Mogul 8-16-H. P. light weight oil tractor



Mogul 8-16 makes an ideal orchard tractor

The great economic law which makes a man's farm profitable is not the amount it produces per acre nor the price the crops sell for — it is, instead, the difference between the amount it costs to raise the crops and the selling price. The wider this difference the greater the profit. Long ago competition drove factory managers to recognize this law and more and more it is becoming the standard of operation for agricultural workers, although only one of the advantages, this is the angle from which the average farmer should consider the tractor. It is evident that a tractor to be of real value to the farmer must be economical and to be economical it must burn oil.

The Mogul 8-16-H. P. tractor has been developed to meet this demand for an economical and practical general-purpose farm tractor for the average size farm, and while it has been made simple, small and light, it has been made strong and durable by eliminating unnecessary parts and using the best material available for each part. In the 8-16 Mogul we offer a tractor

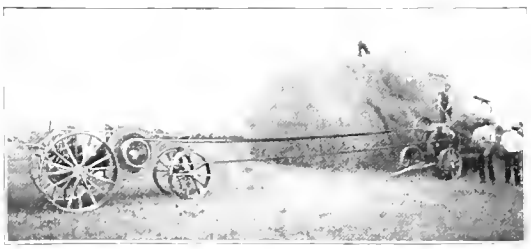
Plowing with a Mogul 8-16

Mogul 8-16 makes big fields seem small

MOGUL

(What the Mogul 8-16-H. P. Tractor Will Do)

After harvesting, Mogul 8-16 threshes the crop

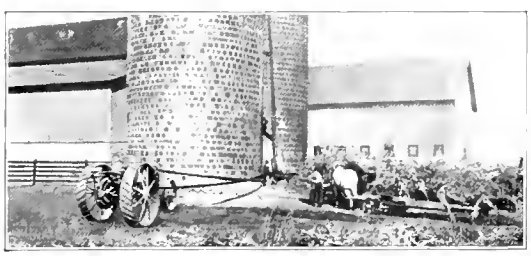


Mogul 8-16 baling hay for market

which is a profitable investment for any farmer, because it gives more power at the draw bar and on the belt, is more durable, is simpler, easier to operate, in proportion to its cost, weight and size, than any tractor which has ever before been placed upon the market. It will operate successfully on distillate, kerosene, motor spirits, or gasoline, the same as the Mogul portable

The construction of this tractor is surprisingly light, yet lightness has not been sacrificed for strength. This is due to the generous use of steel instead of iron. Weight without friction clutch pulley, 4,920 pounds.

This tractor will pull 8 mechanical horse power at the draw bar, on approximately two gallons of kerosene per hour and will do this



Filling the silo is a good fall job for the Mogul

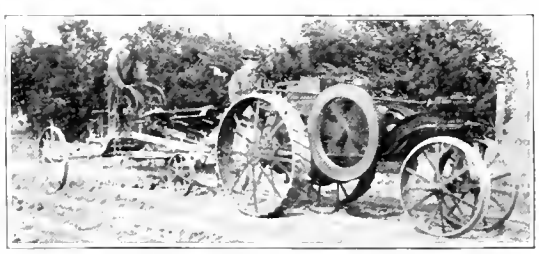
Loading logs with a Mogul 8-16

engine. It is only 56 inches wide, so that it is well adapted to run between rows of corn, pulling corn pickers, corn binders, etc. It is only 5 foot high, and turns short, making it well adapted for use in orchards. The rear wheels carry only 3,500 pounds, and with extension tires the weight per square inch on the ground is 10 pounds, which is approximately only half the weight of the average horse.

work continuously, making this one of the most profitable investments for the farmer.

It is economical enough to lower the cost of crop raising materially, powerful enough to be as universal as a horse in its draft efficiency and to do the work required of an ordinary sixteen horse power portable engine at threshing, filling the silo, running the husker and shredder, baling hay or other customary farm belt work.

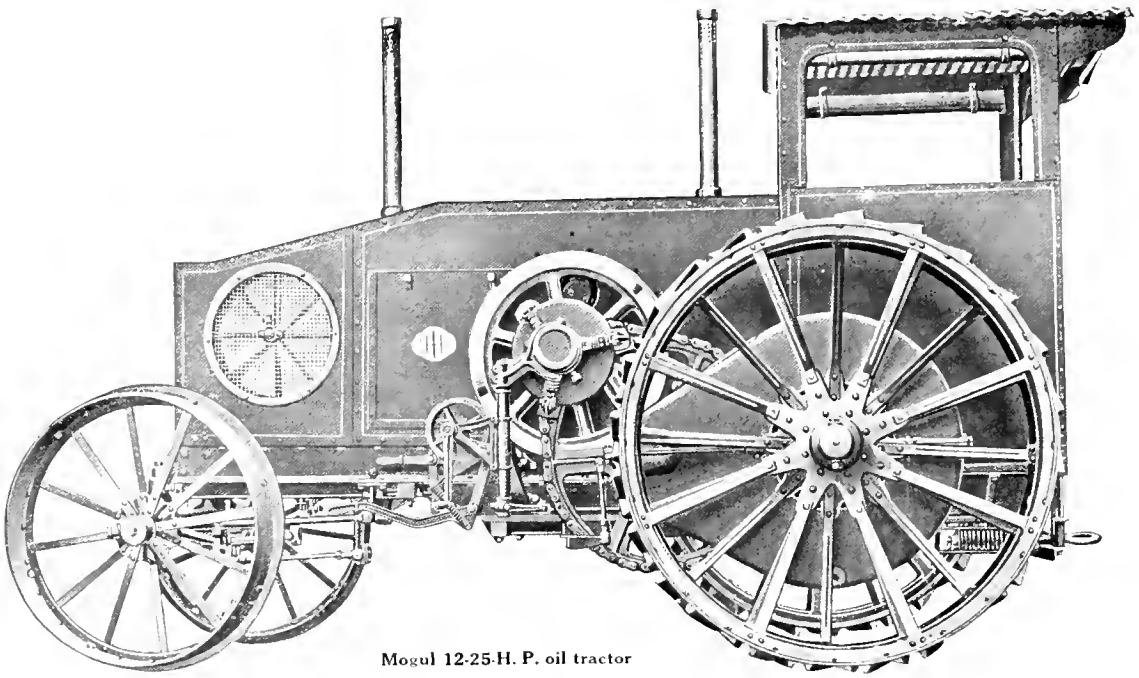
A Mogul 8-16 turns in a 20-foot circle



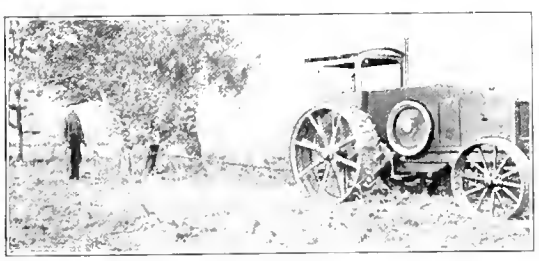
Grading roads with a Mogul 8-16

MOGUL

What the 12-25-H. P. Mogul Will Do



Mogul 12-25-H. P. oil tractor



Mogul 12-25 pulling up trees

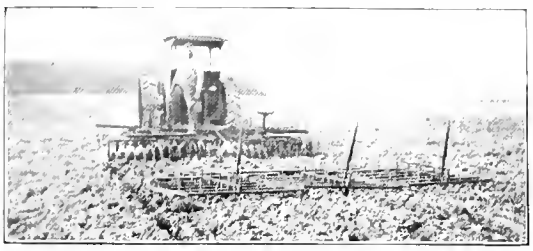
Every move made on the farm requires power. Every move takes time. Both power and time cost money. With a 12-25 Mogul oil tractor, one man governs and handles the power of twelve mechanical horse power. Most heavy farm jobs such as plowing, disking and drilling must be done within a short space of time as the seasons are short; other jobs such as harvesting, threshing, and getting to market are equally imperative. This tractor provides you with reserve power which you can use in emergencies. It is worth something to be able

Mogul 12-25 pulling big grubbing plow through brush

Mogul 12-25 is a one-man outfit

MOGUL

(What the 12-25-H. P. Mogul Will Do)



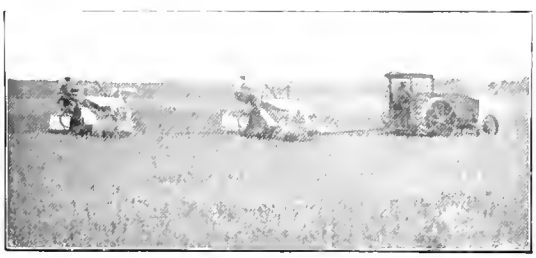
Mogul 12-25 disking and harrowing

Mogul 12-25 putting up the corn crop

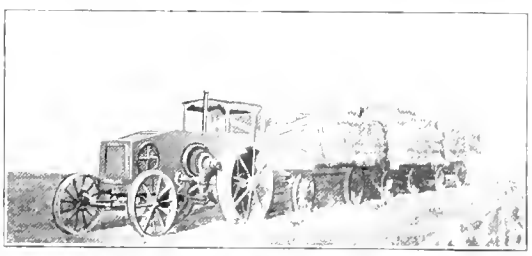
to plow a hundred acres in ten days without calling on busy neighbors for assistance, or hiring expensive extra horses and men.

The two-speed transmission enables the tractor to travel at a brisk speed on the road when used for hauling, and as the frame is spring hung the higher speed is not uncomfortable to the operator.

than the heavier outfits. The complete housing of all working parts from sand and dirt materially lengthens the life of the machine. This tractor has an automobile type-steering device and is spring mounted so that it can be handled with almost as much ease and precision as an automobile truck. This makes it especially desirable for orchard cultivation and when used



Harvesting the crop without horses



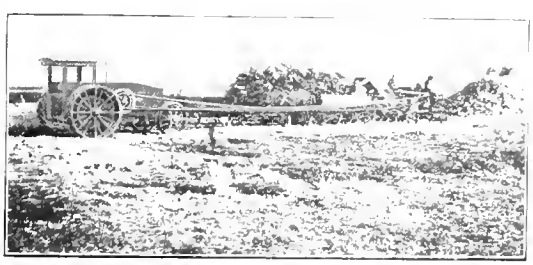
Hauling the hay crop to market

It is exceptionally light in weight, weighing only 10,000 pounds, therefore, it is easy to handle and is safe on bridges and soft ground. This tractor, by actual field tests in competition with other tractors, has proved that it can handle the same amount of work as many other tractors of nearly twice its weight. Even though it is light in weight, it is exceptionally durable, being really stronger in proportion to its weight

for this work the cab and exhaust pipes can be removed.

This tractor will draw from three to five plows, the number depending upon the kind and condition of soil. Its two speeds forward, light weight, automobile steer and the unobstructed view of the operator permit it to be used to better advantage for general work than most other tractors.

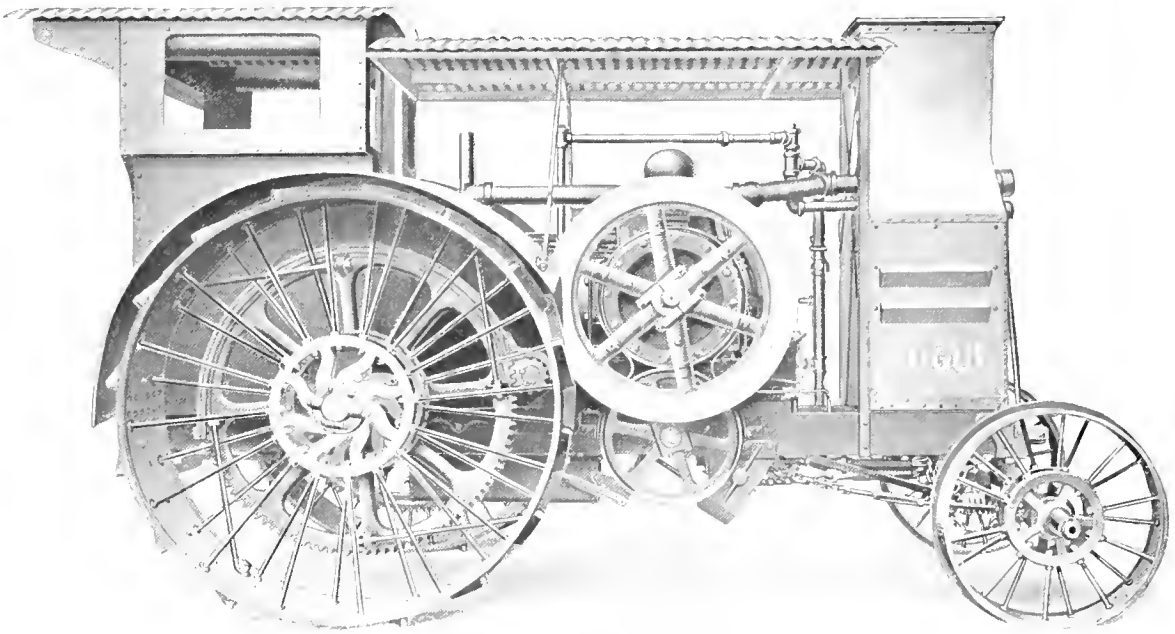
Mogul 12-25 making a quick job of harvesting



Threshing with a Mogul 12-25

MOGUL

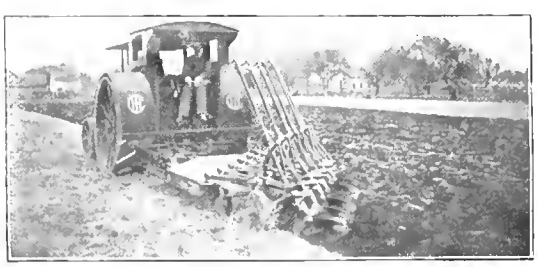
What the Mogul 15-30-H. P. Tractor Will Do



Pulley side of 15-30-H. P. Mogul oil tractor

Breaking up new land with a 24-inch plow

The Mogul 15-30 is one of the most popular Moguls ever designed. It is a medium-sized, heavy-duty tractor, adapted to medium-sized farms and the lighter road work. On farm work it will pull from four to six plows, according to the soil conditions, and will plow as deep as the plows will go. This is a big point in many localities where land should be plowed deeper than it is possible to plow with horses. Many farmers who know they are not plowing deep enough are plowing shallow to save their teams. With the Mogul 15-30, the plow-

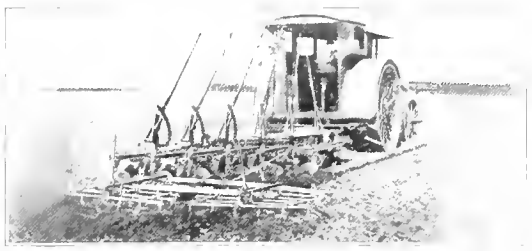


A quick, clean job of plowing

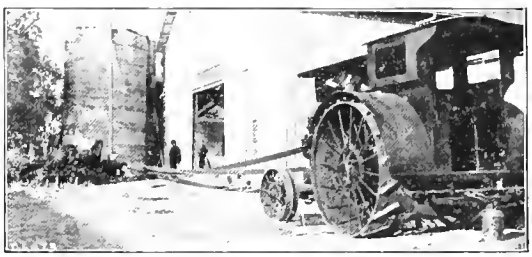
Mogul 15-30 breaking new ground in the Northwest

MOGUL

(What the Mogul 15-30-H. P. Tractor Will Do)



A perfect seed bed prepared in one operation

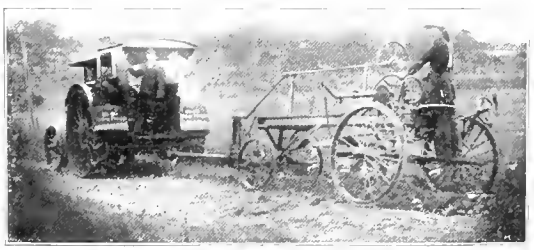


Getting in the winter feed

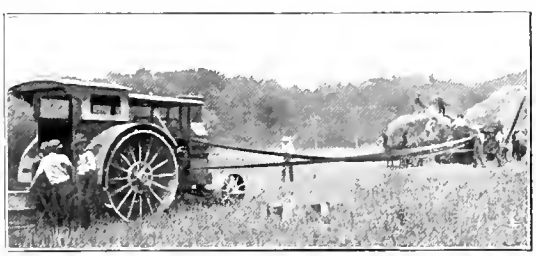
ing can be done at the proper depth to obtain the best results and disked and harrowed at the same time. Many farmers in the Northwest using these tractors find they can practically do without horses as they need no teams for cultivating, the crops being wheat and other field crops. The tractor cuts and threshes the grain and the time consumed is much less than if horses were used. The short season in the North gives the Mogul tractor owners a big advantage as they are sure to get their crops in and harvested in time.

For threshing they are superior to any steam outfit in steadiness of power and far safer, as there are no sparks to catch in the straw pile. In cost of operation, they are far cheaper than the steam outfit as they burn cheap fuels, such as kerosene, distillate, and gas oil. The convenience of Mogul tractors should not be overlooked. They are filled up with fuel, water and oil in the morning and will need no further attention from the supply wagon till next day. Horses have to be watered, fed, bedded down at night, and harnessed for work. The steam tractor must have attention every hour or so from a huge water tank and coal wagon. These tractors are particularly adapted for road construction. They have been used in all parts of the country for this work and have cut the cost of road building to a surprising extent. A Mogul costs nothing when not working and requires only a small shed for shelter in their idle months.

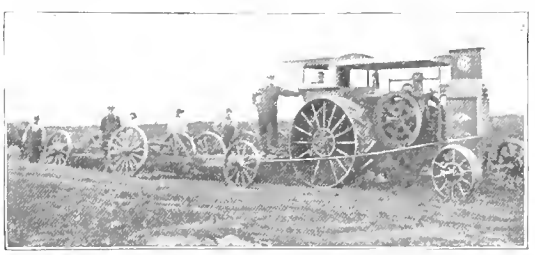
Harvesting with a Mogul 15-30



Making good roads



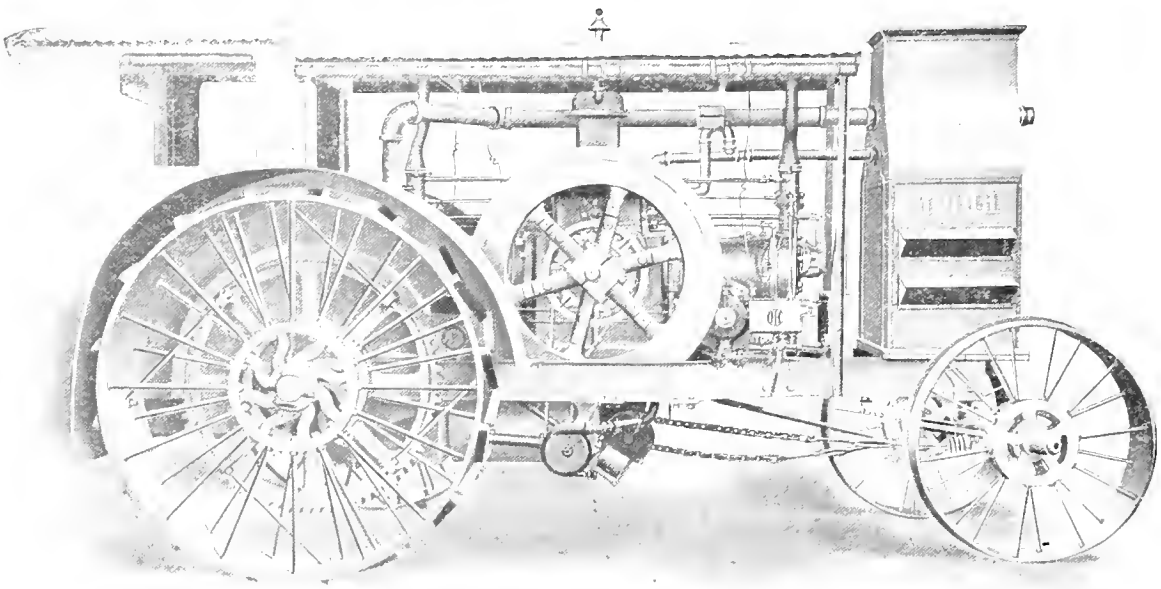
With a Mogul the crop can be threshed at your convenience



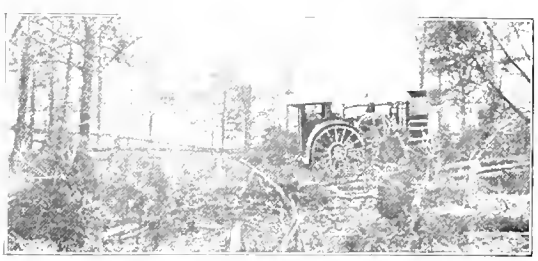
Contractors find the Mogul profitable

MOGUL

What a 30-60-H. P. Mogul Tractor Will Do



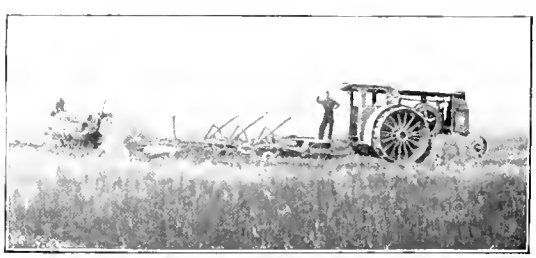
Pulley side of Mogul 30-60-H. P. oil tractor showing starter



Clearing land with a big Mogul

The 30-60-H. P. oil tractor is designed for work on large farms, heavy road work and contractors' use. It is a big, powerful machine, capable of plowing from twenty to thirty acres per day, and handling large acreage to the best advantage. The large grain farmers have used them in preference to horses or mules, both for their greater economy and the convenience and speed with which large ranches and farms can be worked. In many cases, with a Mogul 30-60 for power, the plowing, harrowing and seeding is done in one operation. They will plow, disk,

Mogul 30-60 plowing 30 acres a day

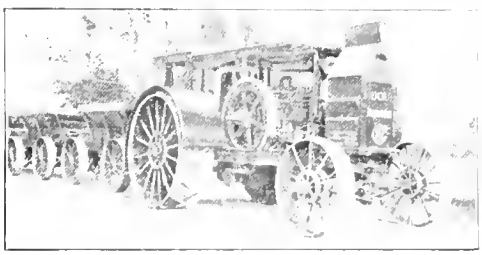


Harvesting, plowing and disking in one operation

MOGUL

(What a 30-60-H. P. Mogul Tractor Will Do)

Mogul 30-60 drilling 7 acres of grain an hour

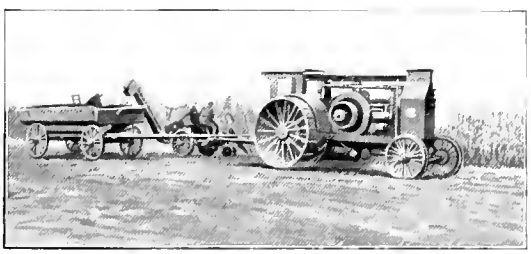


Mogul 30-60 hauling gravel for road work

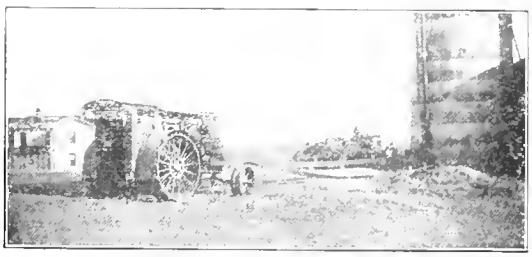
harrow, drill grain, harvest it, thresh it, and haul it to market. For threshing they have the advantage over every other type of power. Their economy alone would recommend them to the average buyer. In addition, they are absolutely safe to use around straw stacks and they can cross bridges that would not hold the heavier steam rigs. Anyone who has used both a steam rig and a Mogul oil tractor knows how much less attention a Mogul needs and what little work it is to handle the small quantity of fuel, water and lubricating oil they require once a day.

Mogul 30-60-H. P. oil tractors have made a record for economy in road building. They handle the heavier road machines with ease, and in many townships are pulling two road scrapers. They not only grade the road, but their wide tires help to pack it even. One township reports that it only costs about the same amount to run a Mogul road-grading outfit as it does for a mule outfit, and the Mogul outfit does eight times as much work. That does not take into consideration the larger space required for housing the mule outfit or the many idle months when the mule outfit must be fed and cared for and the Mogul needs no attention or expense.

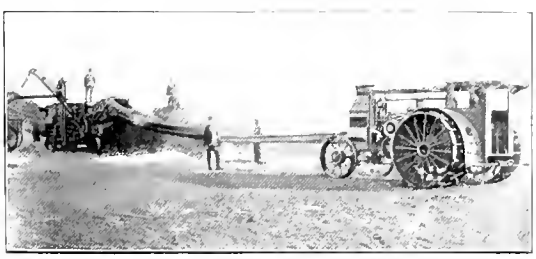
The Mogul is always ready, never gets tired, and will do more work with less men than any other form of power.



A scene on a big Illinois corn farm



Filling the silo



Threshing the crop in Canada

Building roads in Illinois

MOGUL

How the Mogul 8-16-H. P. Tractor is Made

Specifications

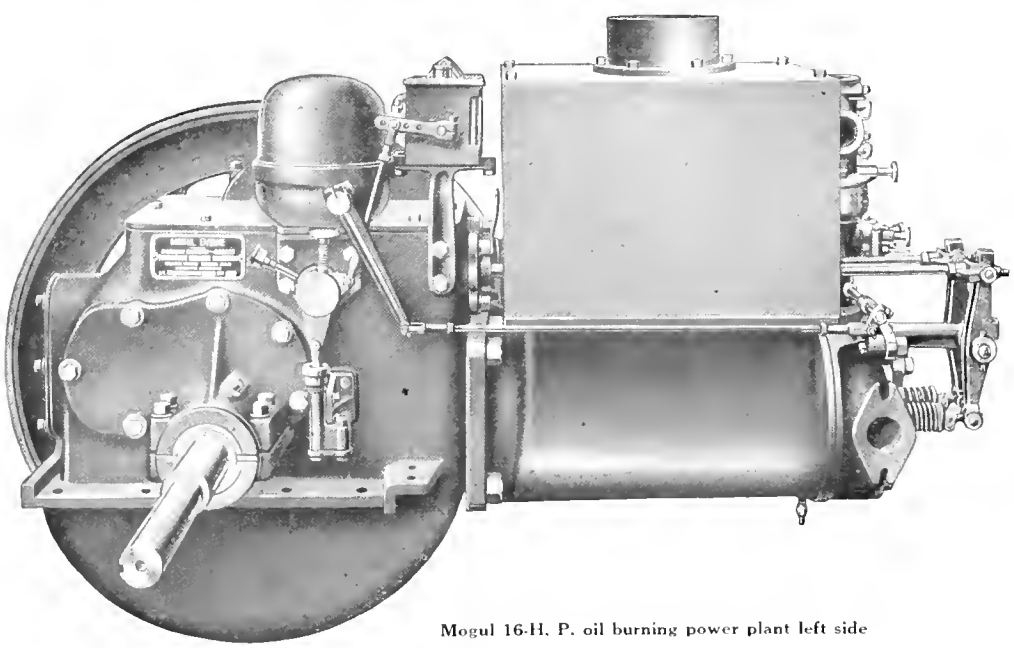
Rated Horse Power on belt work	Rated Horse Power on Draw Bar	Speed of Tractor — miles per hour	Speed of Engine — revolutions per minute	Cylinder		Pulley		Front Wheels		Drive Wheels		Capacity of kerosene tank, gallons	Capacity of water tank, gallons	Total length, inches	Total width, inches	Total height, inches	Approximate shipping weight, lbs.
				Bore, inches	Stroke, inches	Diameter, inches	Face, inches	Diameter, inches	Face, inches	Diameter, inches	Face, inches						
16	8	2	400	8	12	20	10½	36	6	54	10	19	35	135	56	61	5000

Equipment—This tractor is equipped with a standard Mogul friction clutch pulley, 20 inches in diameter, with a 10½-inch face, standard diagonal type lugs on the rear wheels, magneto, oiler, can of oil, can of grease and necessary tools.

Special Equipment—Five-inch extension rims for rear wheels, and long ice lugs. Special angle lugs extending over the side of the wheel for use on soft ground. Special heavy road wheels, special heavy rear extensions can be furnished on special order.

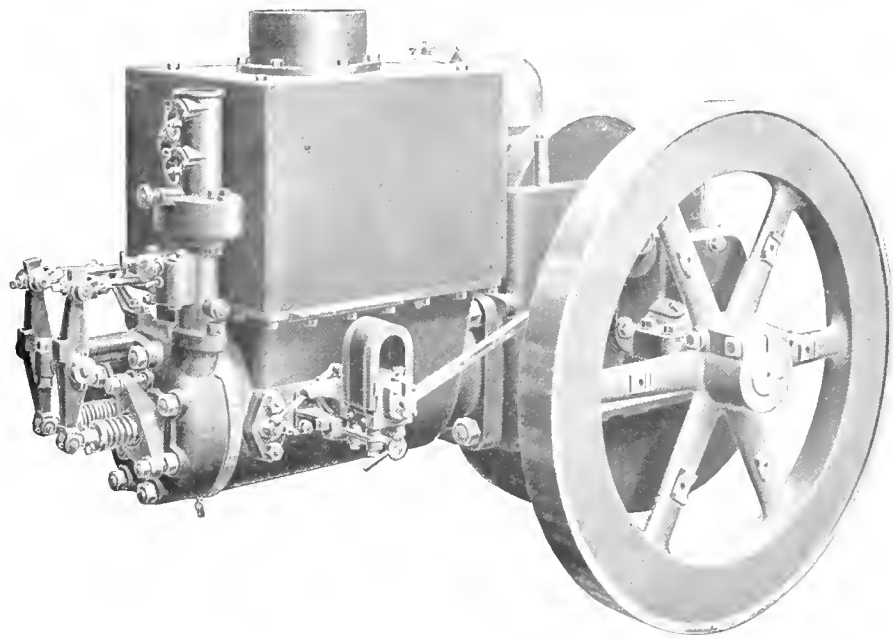
Different size pulleys from 8 inches in diameter up to 28 inches in diameter can be furnished on special order. See page 32.

Special Steering Gear—An automatic steering gear for attaching to the front to steer the tractor while plowing can be furnished on special order.



Mogul 16-H. P. oil burning power plant left side

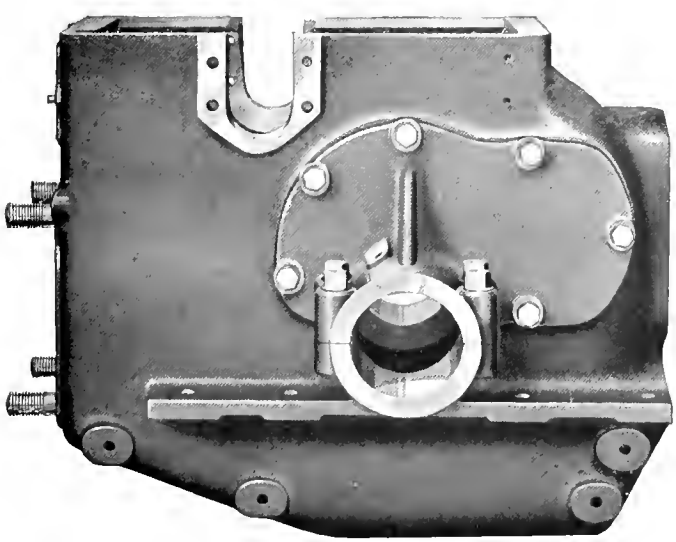
(Description of 8-16-H. P. Tractor Continued)



Mogul 16-H. P. oil-burning power plant right side

Construction

Power Plant—The power plant is a single cylinder, four cycle, slow speed oil-burning engine of extremely simple construction. This is not a reconstructed or light weight general-purpose engine but was designed and built especially for the Mogul 8-16-H. P. tractor by Mogul engineers in the Mogul factories. No feature that would insure its economy in operation, reliability or durability has been omitted; in fact, this engine is a new departure in small tractor construction. It is designed and built for reliability rather than light weight.

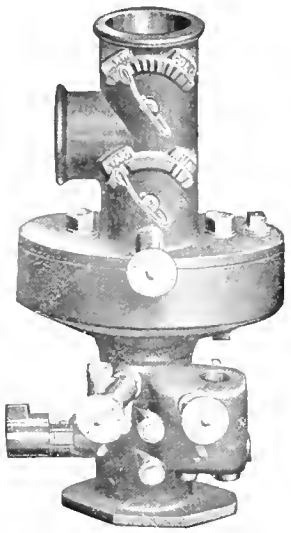


Crank case. Note the adjustable and removable bearings

Crank Case—The crank case is the completely enclosed type. The removable cover is absolutely dust-tight. This protects the piston, connecting rod, and cam shaft bearings from all dust and grit.

Flywheels—A single heavy flywheel is used, with split hub. It is both keyed and clamped to the crank shaft. This large flywheel makes starting easy and insures smooth running of the engine.

MOGUL



Mogul throttle-governed oil mixer burns kerosene, distillate, solar oil, gas oil, motor spirits or gasoline

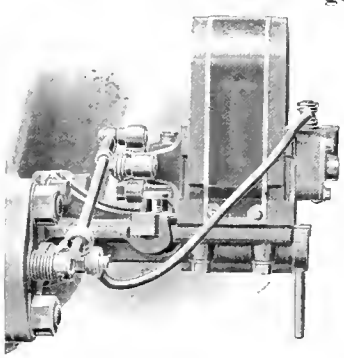
(Description of 8-16-H. P. Tractor Continued)

Valves—Valves are both mechanically operated, and are in removable cages. The exhaust valve cage is water-cooled, the cooling water from the cylinder jacket circulating directly through it. Both valve cages can be easily removed by simply removing the valve tappets, so that it is an easy job to regrind or examine the valves.

Governor—The engine is governed by a flyball throttling governor running in oil. The governor case is cast iron with a removable dust-tight cover which prevents all dust and grit from getting into the governor gears or bearings.

Mixer—The mixer is a genuine Mogul oil mixer, identical with the mixers used in the larger motors. It is very simple, yet handles a great variety of fuels perfectly. The quantity of fuel used by the engine is controled by the throttle in the intake pipe which is operated by the governor. It will operate on kerosene, distillate down to 39 degrees Baume, gas oil, solar oil, motor spirits, naphtha, or gasoline without change of adjustment. A compression relief cam operating in the exhaust valve is devised to facilitate starting.

Cooling—The engine is water-cooled by a large hopper holding 35 gallons, which is ordinarily sufficient for five hours' operation. This type of cooling reduces the number of working parts and the piping of the engine as there is no water pump or water piping required. The hopper is cast separate and bolted to the engine, and can be easily removed.

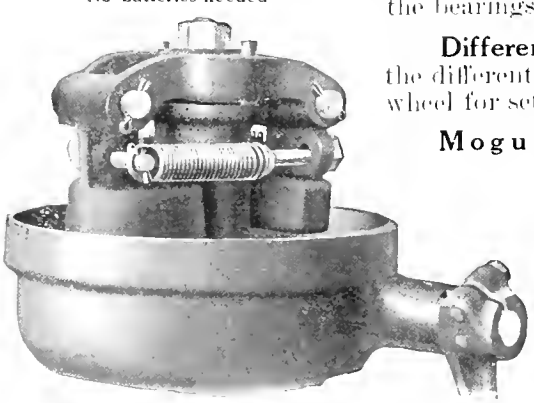


Oscillating magneto
No batteries needed

Ignition—Make-and-break ignition is used, the current being furnished by a high grade oscillating type magneto. With this type of magneto, no batteries are required. The magneto is mounted close to the ignitor, and there are no long wires to short circuit or come off. The magneto is provided with a cam arrangement for retarding the spark when starting.

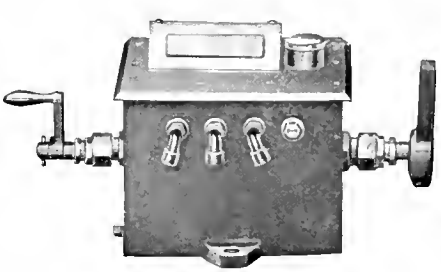
Lubrication—The main bearings and piston are lubricated by an automatic force feed oiler. This oiler is dust-tight, all working parts being on the inside, and will insure perfect lubrication of the bearings as long as there is oil in the tank.

Differential—The differential is located on the rear axle, and the differential frame is furnished with a large brake band and hand wheel for setting the tractor rigid when being used for belt work.



Flyball governor with cover removed. This governor operates in an oil bath in a dust-tight case

Mogul Planetary Transmission—This is the simplest type of transmission that can be used and has many advantages for small tractor work. The gears are always in mesh



Automatic force-feed lubricator lubricates the piston and crank bearings

(Description of 8-16-H. P. Tractor Continued)

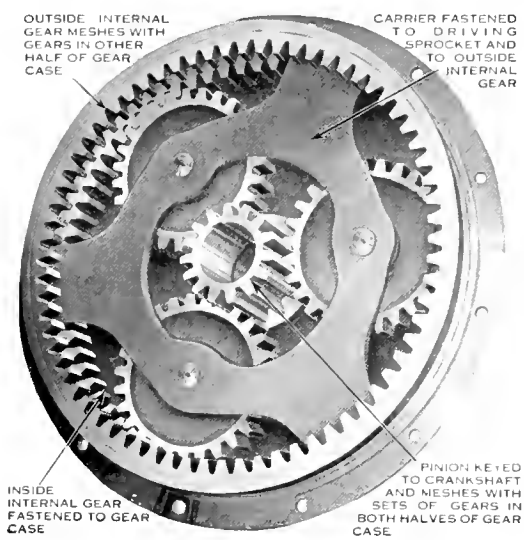
and as these are thrown in or out of action by means of brake bands there is no danger of stripping them. The gear case is dust-tight and the gears run in a bath of oil.

The driving gear which meshes with both forward and reverse intermediate gears is keyed to crank shaft. The driving sprocket is mounted on the crank shaft and carries the forward intermediate gears and reverse internal gear. The forward internal gear is carried by the transmission case which is mounted loosely on its bearings. The reverse intermediate gears are carried by the reverse carrier which is also the reverse clutch wheel and which is mounted loosely on the crank shaft. When the crank shaft is revolved and the clutches are free, the transmission case, reverse clutch wheel and other parts are free to revolve without revolving the driving sprocket. When the forward clutch band is tightened onto the transmission case so that it cannot revolve, power is transmitted to the driving sprocket through the drive gear, forward intermediate gears and internal gear, and the driving sprocket revolves in the same direction as the crank shaft at a much lower speed. When the forward clutch is free and the reverse clutch is engaged onto the reverse clutch wheel, power is transmitted to the driving sprocket through the drive gear, intermediate reverse pinions and internal gear, and the driving sprocket is made to revolve in the opposite direction from the crank shaft at a much slower speed. This form of transmission is very compact, is dust-proof, operates without noise, is durable and can be conveniently and thoroughly lubricated.

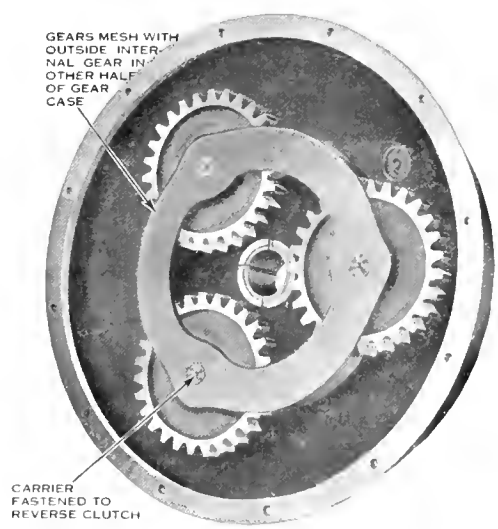
Chain Drive—Power is transmitted from the transmission by a chain on the left side, to the differential mounted on the rear axle equally to both large drive wheels, the chain which is amply strong to take care of all the power the engine can produce.

This method of power transmission has several advantages. It eliminates the trouble caused by gears getting out of alignment, and it gives the engine a more elastic load to pull against.

Frame—The frame is composed of channel steel. The channels are curved up from the front wheels, forming an arch, which absorbs the greater part of the engine vibration, making this tractor very quiet and steady while in operation.



Inner half of planetary transmission with crank shaft pinion removed



Outer half of planetary transmission with shaft and pinion removed

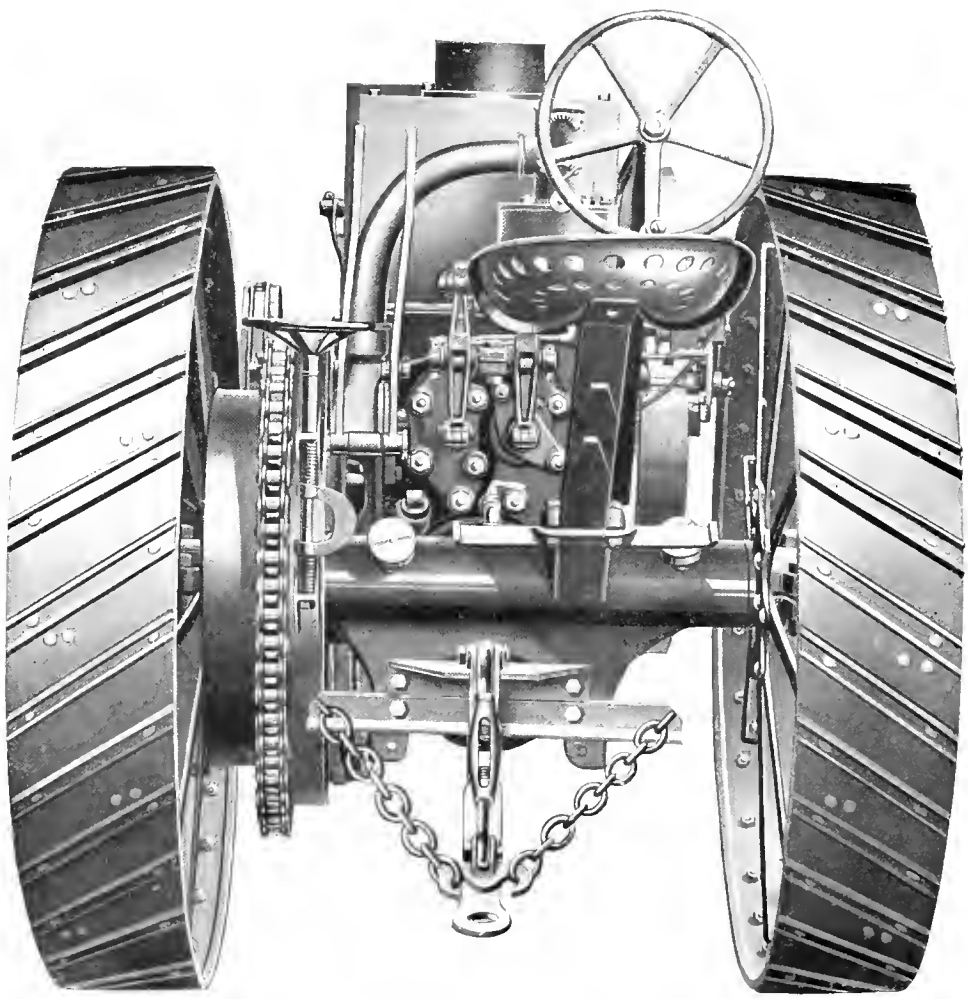
(Description of 8-16-H. P. Tractor Continued)

Wheels—The wheels are very strongly made, with flat spokes hot-riveted to the hubs and rims. The rims are made from specially-rolled sections with reinforced edges. Diagonal channel type steel cleats are bolted on the drive wheels.

Steering—This tractor is steered by a hand wheel convenient to the driver, operating a non-reversible worm and sector-steering gear. This type of steering gear enables the operator to handle his tractor as easily as an automobile, and to turn very short.

Operator's Accessories—The operator sits on a spring-mounted steel seat which is provided with foot rests at the bottom.

The location of the seat gives the operator a clear view of the right front wheel and the plowed land so that a straight course can be easily steered. The steering wheel is directly in front of the seat and the mixer, brake and operating levers are in easy reach.



Rear view of Mogul 8-16-H. P. oil tractor

MOGUL

How the Mogul 12-25-H. P. Tractor is Made

Specifications

Horse power	Rev. per min. of engine	Plowing speed—miles per hour	Road speed miles per hour	Pulley		Front Wheels		Rear Wheels		Dimensions of Tractor			Capacity gasoline tank—gallons	Capacity kerosene tank—gallons	With fuel tanks empty—weight, lbs.
				Diameter—inches	Face—inches	Diameter—inches	Width of tire—inches	Diameter—inches	Width of tire—inches	Length—inches	Width—inches	Height—inches			
12-25	550	2	3	13	9	40	6	60	12	162	81	100	5	20	10,000

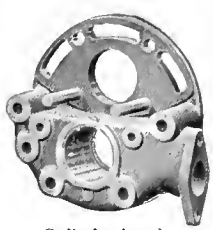
Equipment—The I H C Mogul 12-25-H. P. oil tractor is completely equipped ready to run, and includes the following accessories: Gear-driven magneto, oil can, can of lubricating oil, necessary tools, tool box and special ice lugs.

Special Accessories—K. W. ignition, special lugs, bow fender for orchard work, kerosene head light, extension tires for rear wheels and front wheels, and special heavy wheels for road work. Mogul gasoline starting engine can be furnished, on special order at extra cost.

Note—No special size pulleys are furnished for this tractor.

General Description

Cylinder



Cylinder head

Power Plant—The power plant consists of two-cylinder opposed oil-burning engine of simple design developing 25-H. P. on the pulley. This engine has many individual features of design that particularly adapt it for the hard gruelling work of the farm tractor. The oil-burning feature is the result of years of experience in designing and building oil engines, and should appeal strongly to careful purchasers who realize the importance of proper design and construction in this type of engine.

Valves—The valves are of special design. They are both mechanically operated and located in cages which can be easily removed. This makes inspection an easy matter. The exhaust valve cages are water cooled.

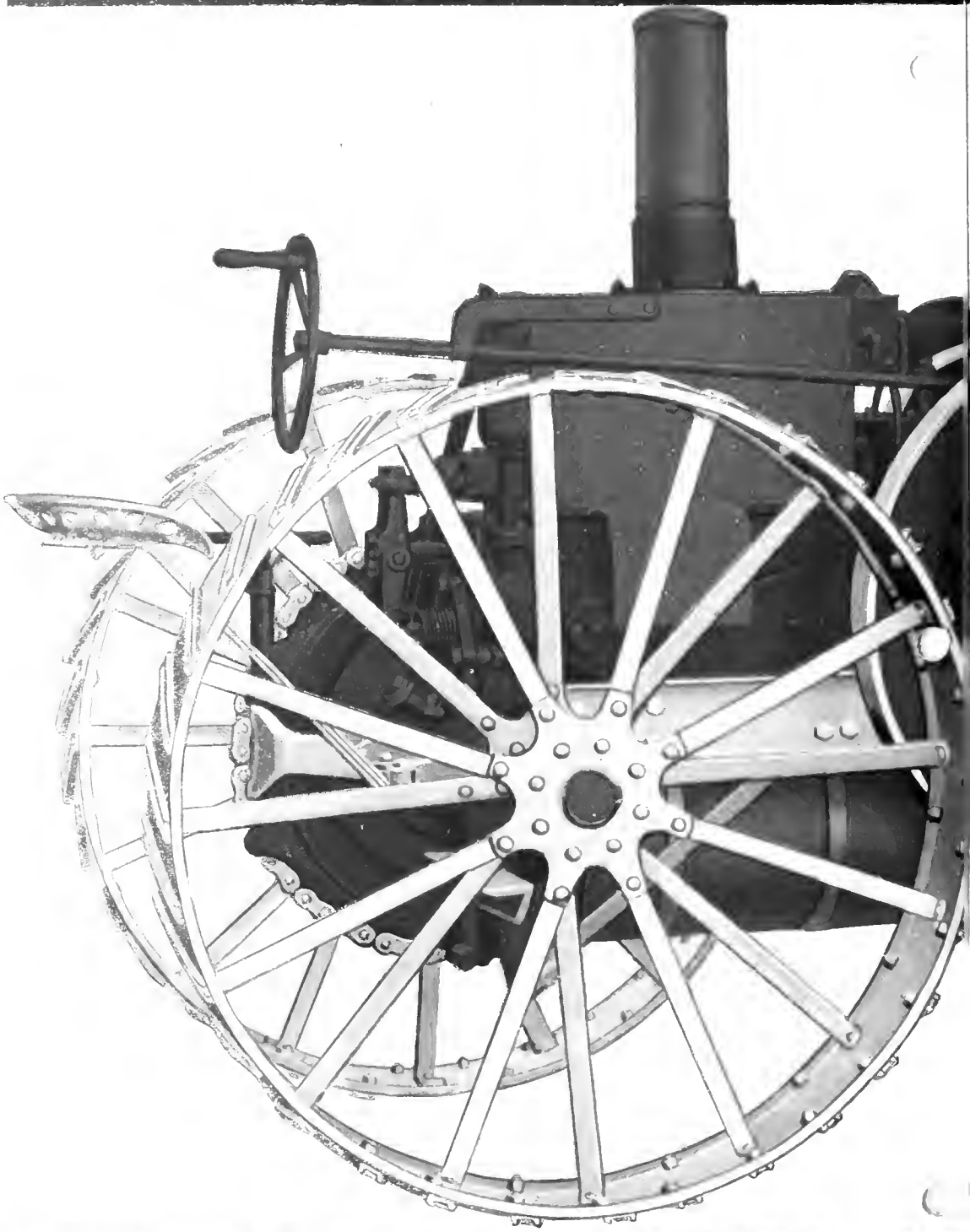
Ignitor

Ignition—Jump spark ignition is used, the current for which is furnished by the Wyco ignition system. This system is very simple and does away with the movable ignitor and push rods. No batteries are needed and the engine gets as good a spark for starting as when running.

Mixers—Two mixers are used, one for each cylinder. They are adjusted by four knobs mounted on the dash in easy reach of the operator. These mixers are the famous Mogul oil mixers that have made the large Moguls operate so successfully on kerosene and the heavier fuels, such as gas oil, distillate and solar oil.

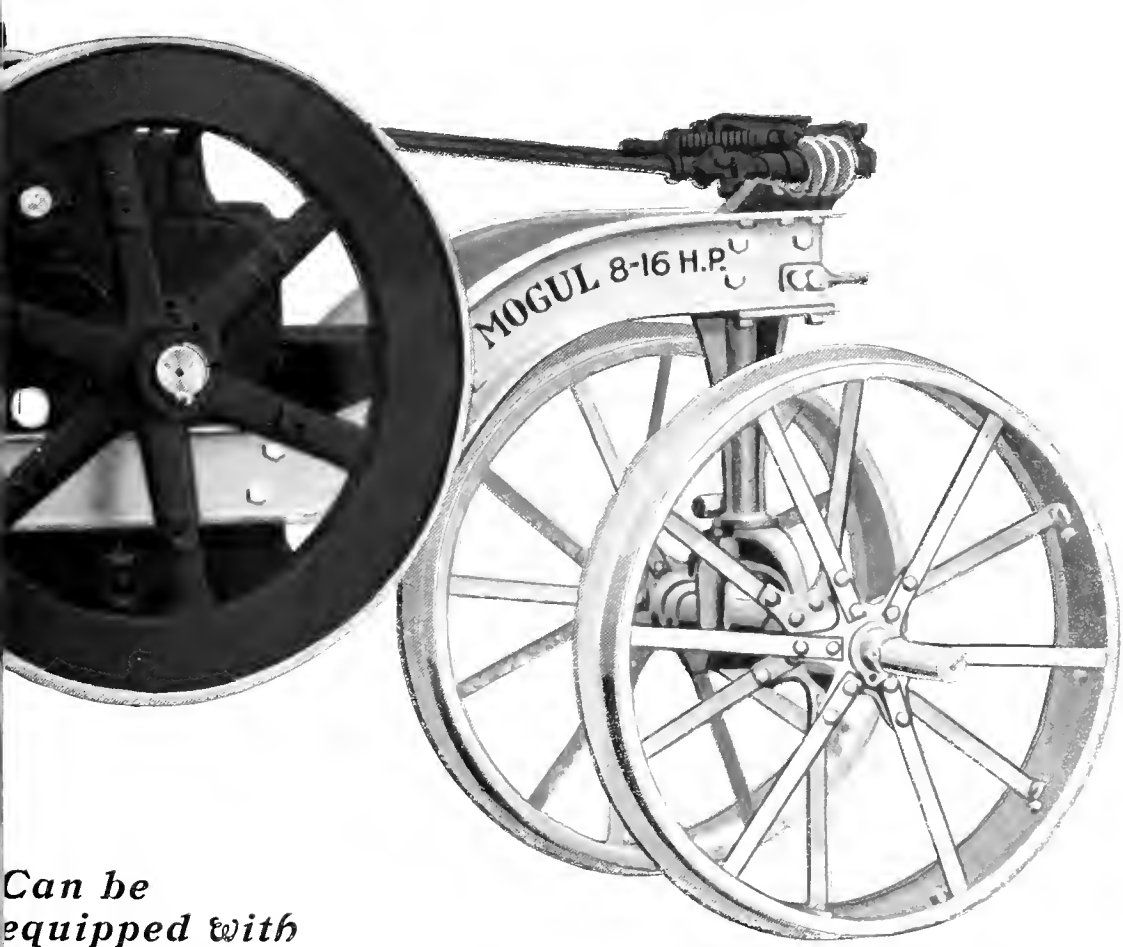
Piston and connecting rod

THE SMALL-FARM TRACT



MOGUL 8-16-HORSE P

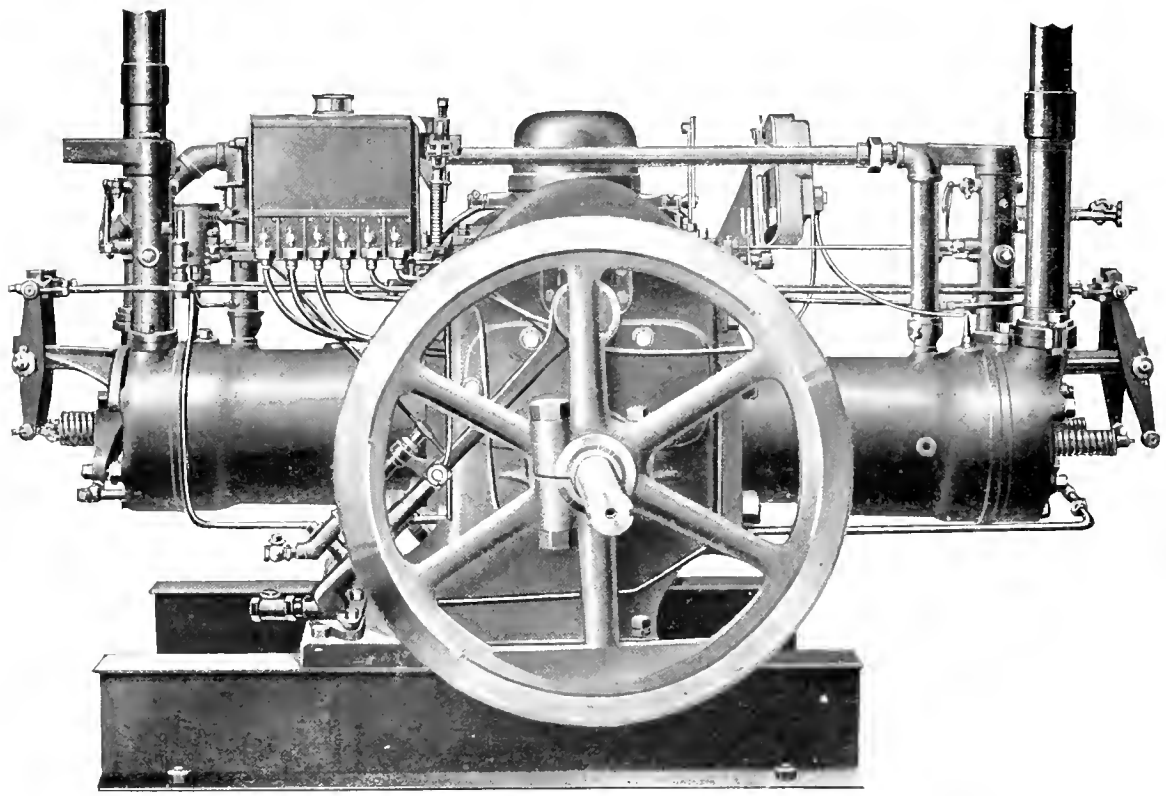
OR FOR ALL FARM WORK



Can be equipped with Automatic Steering Device

OWER OIL TRACTOR

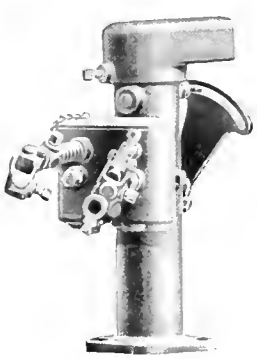
(Description of 12-25-H. P. Tractor Continued)



Mogul 25-H. P. power plant—Note the six-feed mechanical force-feed oiler

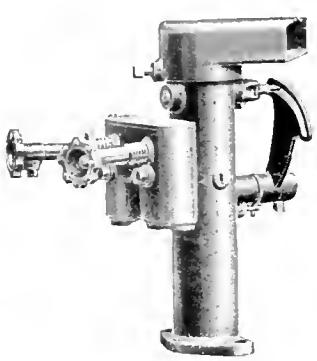
Cooling — The engine is water-cooled by a special heavy duty type radiator, through which water is circulated by plunger type circulating pump.

The radiator is provided with a belt-driven fan to aid in cooling and both radiator and fan are separated from the main engine housing by a partition to prevent dust coming through the radiator and collecting on the engine.



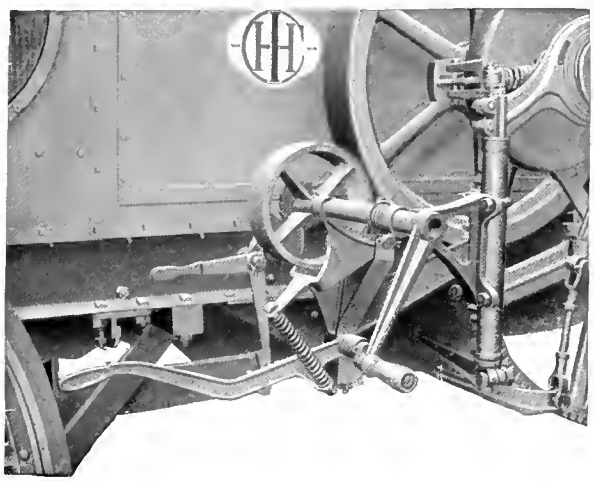
Front mixer

Starter — The mechanism consists of a frame which is clamped by bolts to the clutch bracket and tractor frame, a crank with friction wheel, and a mechanism with lock and release catch for moving the friction wheel against the flywheel. When it is desired to start the engine, the large lever is pulled



Rear mixer

(Description of 12-25-H. P. Tractor Continued)



Hand starter on 12-25-H. P. Mogul tractor

up. This engages the friction wheel with the engine fly wheel and the engine is ready for cranking. As soon as the engine starts, the small lever at the top is pulled, and the friction wheel is automatically disengaged from the fly wheel by means of a spring.

Lubrication — The crank shaft and connecting rod bearings and pistons are lubricated by a six feed mechanically operated force-feed oiler. This provides ample lubrication at all times, yet does not waste the oil.

Steering — The steering mechanism is of the worm and sector type. This enables the operator to manipulate the tractor to the utmost nicety. The steering wheel is placed on the right hand side where the operator has a clear view of the right front wheel and the land ahead so that a straight furrow can be plowed.

Transmission — The transmission is of the sliding gear type with two speeds forward and one reverse. All gears are steel, machine cut and run in oil. The gears are housed in a cast iron dust-tight case that absolutely prevents dirt or grit from getting into the gears. The pinions and chains are enclosed in sheet steel dust cases. A disk type clutch for transmitting power from the engine to the gears is provided. A chain drive is used from the engine crank shaft to the counter shaft. The counter shaft is the full width of the tractor and equipped with a double chain drive to the rear axles. This eliminates all trouble with gears getting out of alignment.

Wheels — The rear wheels are equipped with the Mogul type rim, described on page 31, which enables the operator to change lugs without loss of time. The rims are rolled with reinforced edges.

Front axle

Axles — The rear axles are of high-grade steel and provided with a screw-jack mechanism with a locking device on both sides for tightening the chains. The front axle is of cast steel of the I-beam type.

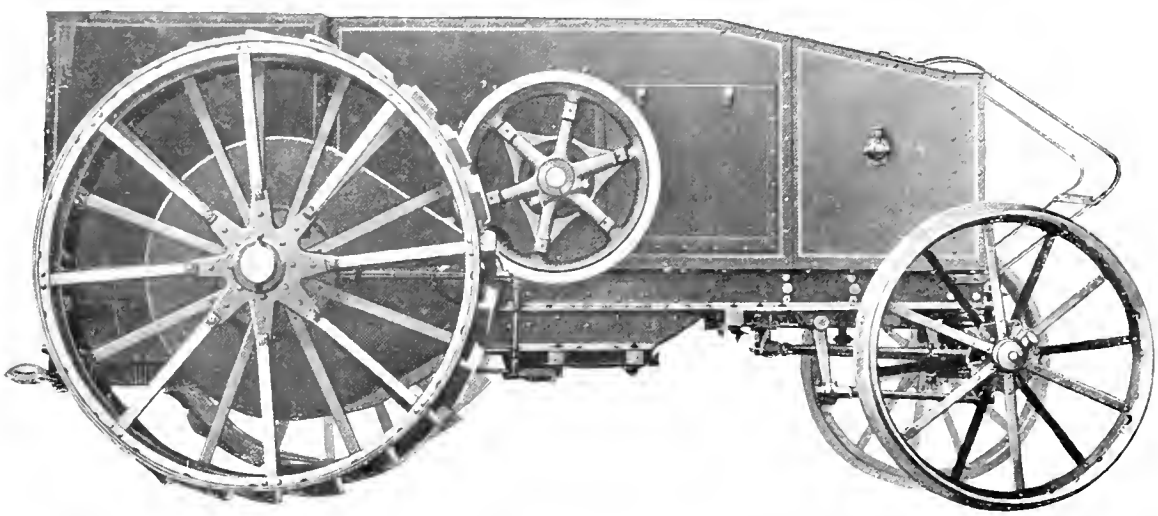
Truck Frame — The truck frame is of heavy steel channels braced to form a secure bed for the engine and gears. The frame is spring mounted on the axles, both front and rear, which eliminates the jar and vibration and lengthens the life of the tractor. The engine housing is bolted to the frame and is dust-tight. Doors are provided for inspecting the engine and other enclosed parts; if necessary the entire housing can be taken off.

Cab — The cab is of steel, provided with side and rear curtains to protect the operator in bad weather. A removable seat is provided, which adds much to the comfort of the operator.

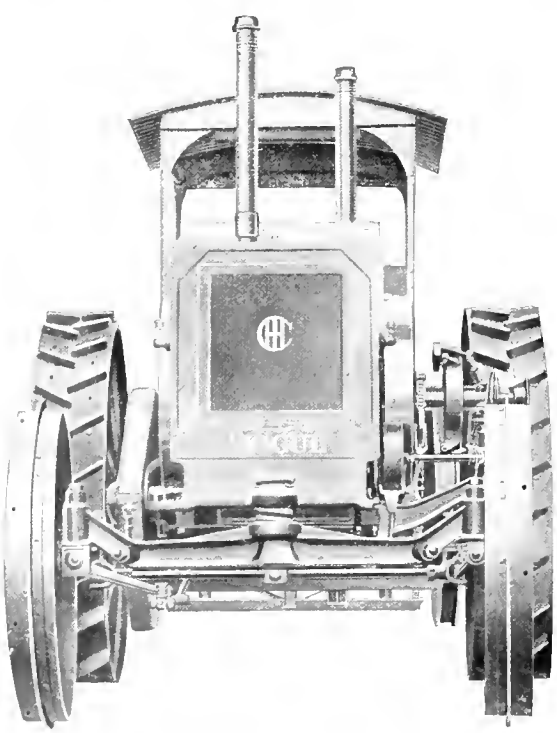
Can be used for orchard work: By use of an attachment for this light tractor, it can be made into practically another machine and be put to the use that only a few special machines are suited — take off the cab — one man can do it easily — remove the exhaust pipe for the time being

MOGUL

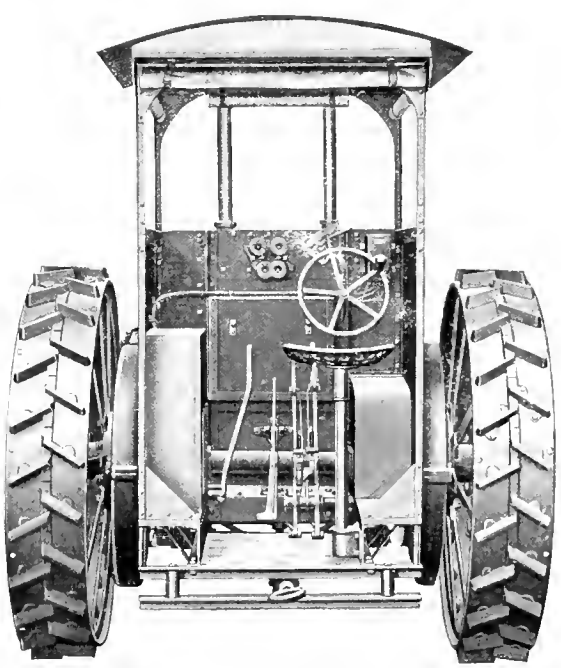
(Description of 12-25-H. P. Tractor Continued)



and attach the bough fender and you have a machine that can go under the trees in an orchard and plow, disk or harrow the same as in an open field. The extreme height is only seventy inches over all—about the height of an average man, and it can go under trees that a horse could not without injury to itself.



Front view Mogul 12-25-H. P. oil tractor



Rear view Mogul 12-25-H. P. oil tractor

MOGUL

How the Mogul 15-30-H. P. Tractor is Made

Specifications

Horse Power	Rev. per minute of engine	Range of speed R. P. M. with speed-changing device	Pulley		Front Wheels		Rear Wheels		Dimensions of Tractor			Capacity fuel tank—gallons	Speed of tractor—miles per hour	Shipping weight tanks empty—pounds
			Diameter—inches	Face—inches	Diameter—inches	Width of tire—inches	Diameter—inches	Width of tire—inches	Length—inches	Width—inches	Height—inches			
15-30	380	200 to 400	28	11	44	10	73	24	208	103	119	45	1.8 to 2.06	15400

Equipment—15-30-H. P. tractors are completely equipped ready to run, and include the following accessories: gear-driven magneto, swinging drawbar, friction clutch pulley, battery box, batteries, spark coil, oil can, can of lubricating oil, necessary tools, spring seat and side curtains in cab.

Special accessories—Acetylene headlight, side curtains to enclose engine, special size pulleys, extension tires for rear wheels, and special lugs for both front and rear wheels, extension tires for front wheels, slip-over tires for front wheels, special heavy rear road wheels and Mogul air-cooled gasoline starting engine with friction device can be furnished on special order.

When necessary, Mogul tractors can be equipped at the factory with a special low hitch.

General Description

Power Plant—These engines are of the four-cycle type of design, conservatively rated at 30-H. P. No effort nor expense has been spared to make them the most economical, simple, and reliable engines ever designed. Every part is strongly constructed, with a generous factor of safety, to withstand the heaviest working strain under which it is likely to operate.

Crank Case—The crank case is completely enclosed, which protects the cam shaft, gears and piston from dust and dirt and prevents the connecting rod from throwing oil about. A breather with a spring diaphragm is provided to relieve the compression in the crank case.

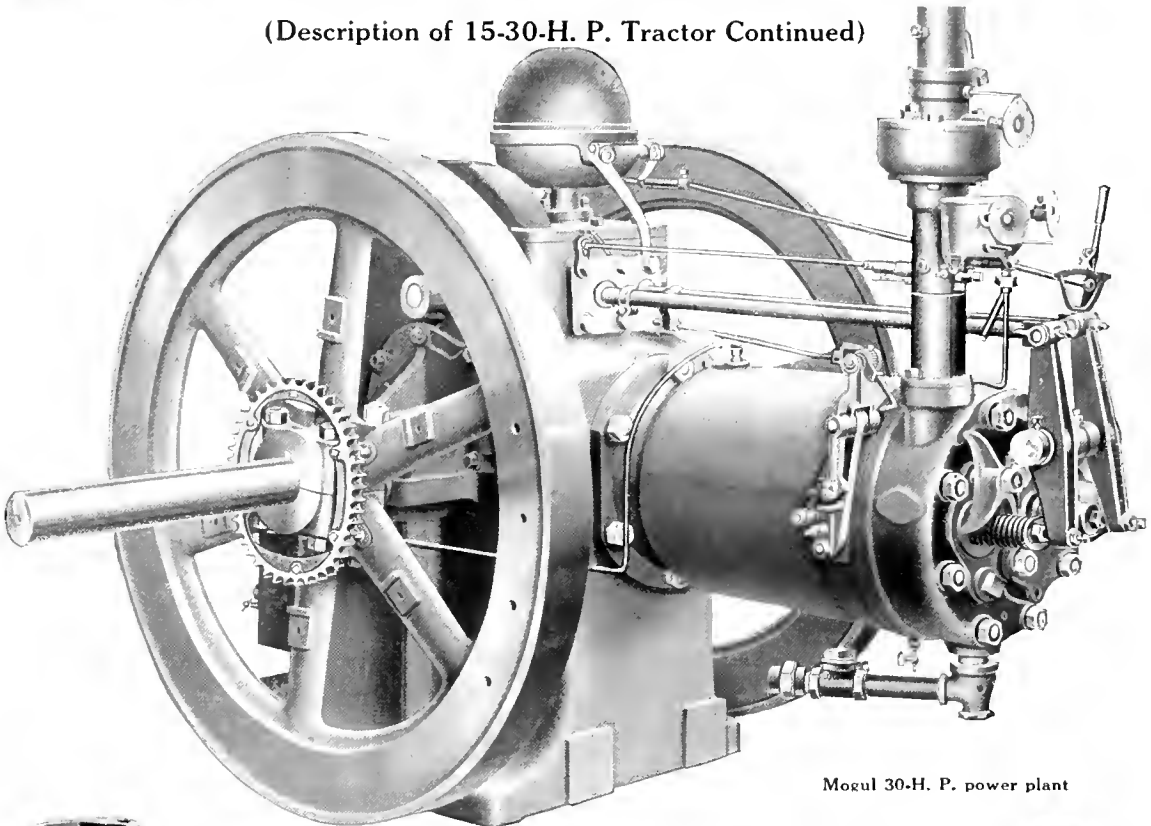
Piston and connecting rod

Cylinder—The cylinder is designed to conform to the best gas engine construction. It is equipped with a priming cup, a relief cock, a drain cock, and drain cocks in the water system to drain the water from the water jacket in freezing weather.

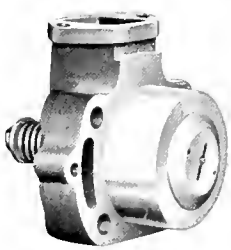
Piston—The piston is provided with five lapped-joint piston rings provided with pins as they cannot turn out of place. The crank pin bearings are of phosphor bronze, babbitt lined, securely held in place with lock nuts and cotter pins. The wrist pin is large in diameter and long to give ample bearing surface, and is provided with special anti-friction metal bearings.

Exhaust Valve—The water-cooled exhaust valve is a special feature of Mogul tractors. It is mounted in a separate cage, so that it can be easily removed without disturbing any other parts, and is water-jacketed so that the cooling water from the cylinder water jacket circulates all around it. This is a very desirable feature, as it prevents the valve from becoming too hot from the burning gas and sticking or breaking.

(Description of 15-30-H. P. Tractor Continued)

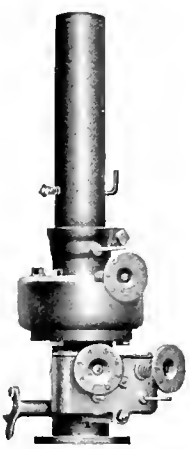


Mogul 30-H. P. power plant



Water-cooled exhaust valve cage and valve

Inlet Valve—The inlet valve is specially constructed and mounted in a separate cage in the cylinder head. By loosening a single nut on the clamp it can be easily removed without disturbing the cylinder head or other parts. The simplicity of this valve is another strong point.



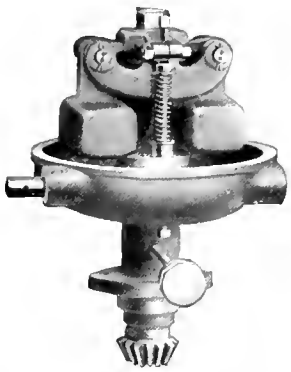
Oil mixer

Mixer—The mixer is designed to operate on kerosene, solar oil, gas oil or distillate, but will operate equally well on naphtha, motor spirits or gasoline. This is a very desirable feature, as it enables the owner to operate his engine on the fuel cheapest in his locality. The mixer design is a distinct feature of Mogul tractors and can be relied on under all conditions of weather or fuel. It consists of the kerosene mixer and water valve, and an auxiliary gasoline mixer and supply cup for starting.

Inlet valve cage and valve

Ignition—Make-and-break ignition is used. The ignitor is insulated with a special mica insulation and can be easily removed for cleaning or inspection. Electric current is furnished by a high-grade low tension magneto, which is gear-driven from the cam shaft. A compression relief cam, operated by a small lever on the crank case, is provided for releasing part of the compression for starting. The spark can be advanced or retarded at the will of the operator by a lever conveniently located on the left side of the cylinder.

(Description of 15-30-H. P. Tractor Continued)



Governor with cap removed

Governor—The governor is of the fly-ball throttling type, gear driven from the cam shaft, and acts on a butterfly valve in the mixer so that the engine does not miss an impulse, although only enough fuel is used to keep the engine at a uniform speed. This governor is extremely sensitive and the speed variation of the engine is very slight.

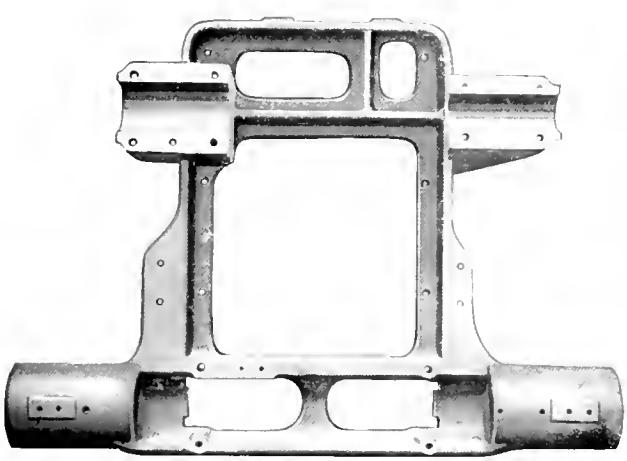
The governor runs in oil and is enclosed by a removable cover to protect it from dust and dirt.

A speed-changing device operated by a lever on the cylinder and acting on the governor enables the operator to vary the speed of the engine.

Lubrication—A 4-feed mechanical oiler lubricates the crank shaft bearings, the connecting rod and cylinder. This oiler is of the force-feed type, being driven by an eccentric from the cam shaft. The bearings are thus always supplied with sufficient lubricating oil; at the same time none is wasted.

Cooling System—The engine is water-cooled. The admission of cooling water to the cylinder jacket is so arranged that a constant temperature is automatically maintained. The cooling tank consists of a series of drip trays enclosed in a tank. The water is pumped to the top tray and drips down from tray to tray so that when it reaches the bottom it is cool enough to be pumped through the water jackets again. The water is circulated by a rotary pump driven from the flywheel. No fan is required, as a draught of fresh air is induced in the tank by exhausting the exhaust gases from the engine into the top of the tank through an especially designed exhaust head.

Frame—The frame is of most substantial construction. It consists of heavy steel channels, continuous from front to rear and a heavy one-piece casting bolted to the channels. This casting carries both the main axle bearings and the countershaft bearings, so that it is impossible for them to get out of alignment. The engine is fastened to both the channels and the casting so that it is practically part of the frame.

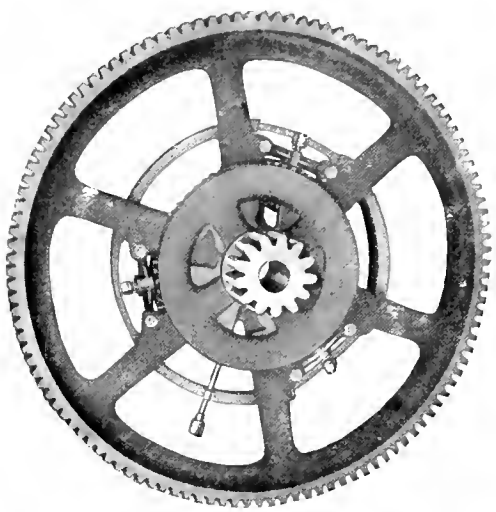


One-piece cast frame carrying the rear axle and countershaft

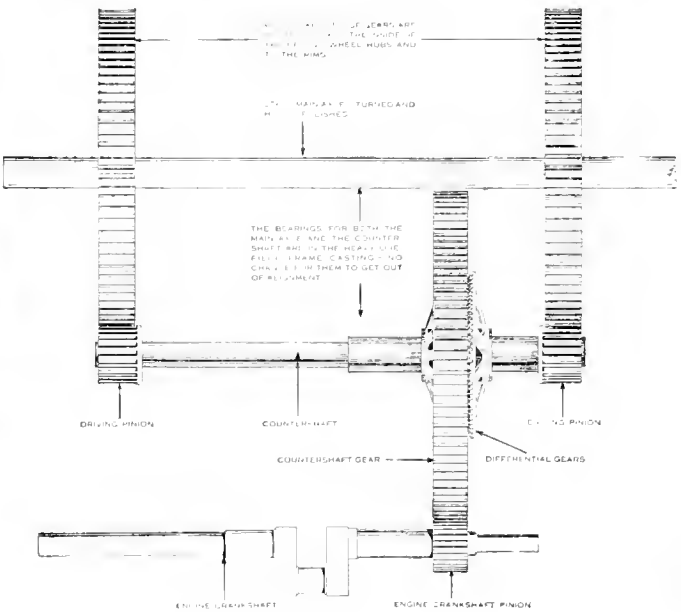
Double Gear Drive—All Mogul tractors are equipped with a double gear drive. That is, each rear wheel is equipped with a bull gear which is driven by pinions on each end of the countershaft. This eliminates torsional strain on the frame and axle. A diagram showing the arrangement of these gears will be found on page 24.

Transmission Gears—The power is transmitted from the engine to the large machine-cut, semi-steel countershaft differential gear by a machine-cut steel pinion on the crank shaft. The friction clutch is operated by a lever from the platform. The pinions on the countershaft mesh with the large bull-driving gears on the drive wheels. These bull gears are bolted to the drive wheel hubs and also braced to the tires with four large braces, so that there is practically no strain on the hubs and spokes.

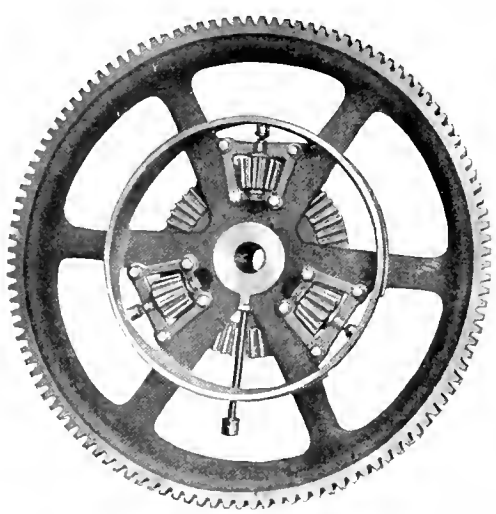
(Description of 15-30-H. P. Tractor Continued)



Outside view of differential gear showing pinion which meshes with the left-hand bull-driving gear



Mogul double gear drive on 15-30 Tractor



Inside view of differential gear with inside bevel gear removed to show small pinions. Note the brake drum cast on the large gear

Differential Gear—The countershaft is equipped with a simple differential gear which relieves the torsional strain on the wheels and axles and permits one driver to turn faster than the other when turning corners. It is conveniently located on the outside, where it can be inspected. The pinions are in separate housings bolted to the large gear and can be easily removed without disturbing any other parts.

Reverse—The reverse is accomplished by a shaft mounted on eccentric bearings, which can be rotated from the platform by a lever. On the left end of the shaft is a pinion meshing with the large countershaft gear. The other end is equipped with a friction wheel. When the eccentric bearings are rotated, the friction wheel moves up and engages a pulley on the right hand engine flywheel, thus transmitting a reverse motion to the countershaft. This type of friction reverse transmission is especially desirable in a farm tractor as it is practically impossible to injure it, and it may even be used as a brake if necessary.

Brake—The brake is a powerful contracting band type brake. The brake drum is cast integral with the large countershaft gear. The brake is operated by a foot pedal located just in front of the operator in the cab. It is self-locking, so that the tractor can be stopped and held on a grade.

(Description of 15-30-H. P. Tractor Continued)

Rear Axle—The rear axle is a steel bar turned true and highly polished and is made exceptionally heavy. This axle is equipped with extra long bearings of special anti-friction metal.

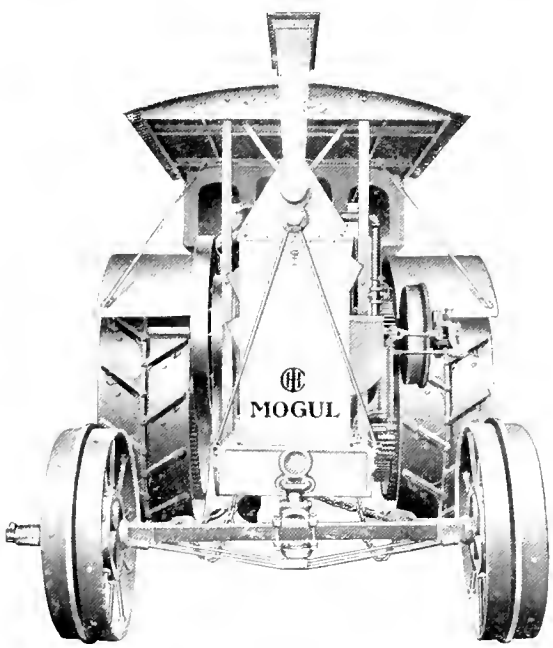
Front Axle—The front axle is constructed of square bar-steel, substantially trussed underneath. It is fastened to the frame by a ball-and-socket joint so that the axle has free movement in all directions.

The axle is so arranged so that when the tractor is being used for belt work, a low belt can be used, if necessary.

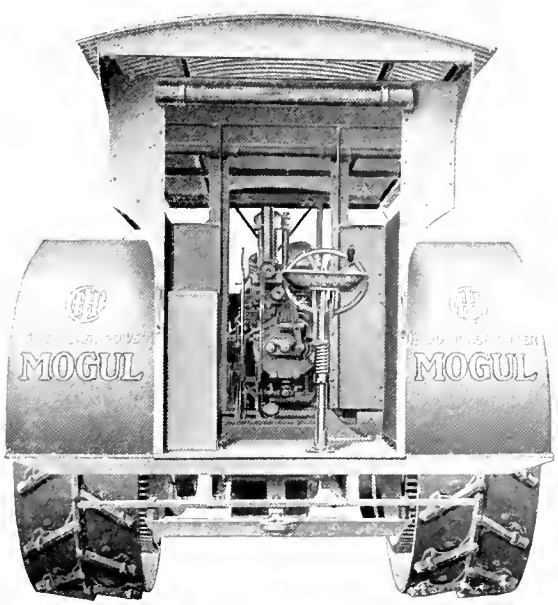
Wheels—The wheels are strongly constructed with large, round spokes riveted to the rims. The rims are rolled with strongly reinforced edges, so that they will withstand any shocks or jolts caused by hard and stony roads.

Drawbar—Mogul oil tractors are equipped with a heavy swinging drawbar which is securely tied to the frame near the rear axle and swings in a yoke suspended from the tractor frame. The drawbar is equipped with a spring-draft gear, so that when starting with a heavy load the spring takes up the shock.

Cab—All the engine-controlling devices are within easy reach of the operator. There are only two controlling levers—one for forward speed and one for reverse. The brake is self-locking and is operated by a foot pedal, located below the steering wheel. A spring seat is provided for the operator, which can be easily removed if desired. A large tool and battery box is placed on the left side of the cab. This can also be used as a seat. The platform is enclosed in a steel cab with water-proof side curtains so that it can be completely enclosed if desired.



Front view of Mogul 15-30 tractor



Rear view of Mogul 15-30 tractor

MOGUL

How Mogul 30-60-H. P. Tractors are Made

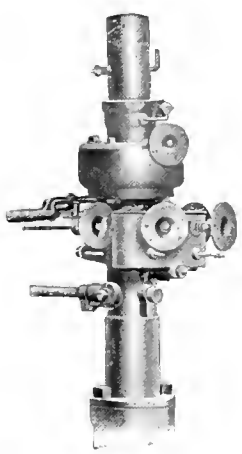
Specifications

Horse power	Rev. per min. of engine	Range of speed R. P. M. with speed changing device	Pulley		Front Wheels		Rear Wheels		Dimensions of Tractor			Capacity gasoline tank—gallons	Capacity kerosene tank—gallons	Speed of tractor—miles per hour at 370 R. P. M. of eng.	With fuel tanks empty—weight, lbs.
			Diameter—inches	Face—inches	Diameter—inches	Width of tire—inches	Diameter—inches	Width of tire—inches	Length—inches	Width—inches	Height—inches				
30-60	330	200 to 400	28	11	48	10	73	24	228	115	112	9	50	2 18	21700

Equipment—The Mogul 30-60-H. P. oil tractor is completely equipped, ready to run, and includes the following accessories: friction clutch pulley, swinging drawbar, magneto, special battery, battery box, spark coil, switch, oil can, can of lubricating oil, necessary tools, spring seat and curtains in cab.

Special Accessories—On special order, rear wheel extension rims, front wheel extension rims, special heavy rear road wheels, front wheel slip-over tires, special rear wheel lugs, special front wheel lugs, special size pulleys, headlight, full set of side curtains, etc. When necessary, Mogul tractors can be equipped at the factory with a special low hitch.

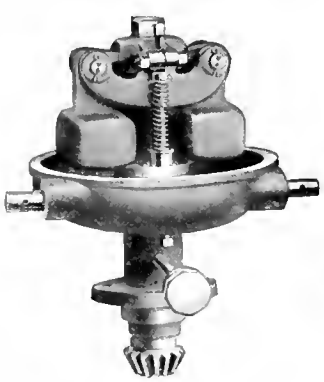
General Description



Rear oil mixer

Power Plant—The power plant is a simple, slow-speed, two-cylinder, opposed engine rated at 60-H. P. on the pulley. This type of engine has many advantages for service where the work is hard and continuous. The opposed cylinders give a perfect balance and the slow speed and enclosed working parts insure long service. In detail such parts as the crank case, pistons, connecting rods, valves, governor, ignitor, cooling system, fuel pump, etc., are the same as on the 15-30-H. P. Mogul tractor except that they are arranged for double-opposed cylinders instead of a single cylinder.

Mixers—Each cylinder has its separate mixer, which operates the same as those on the 15-30-H. P. Mogul tractor, except that they have no gasoline cups. Instead, two fuel tanks are supplied, one holding fifty gallons for kerosene, distillate or solar oil, and one holding nine gallons for gasoline. Both tanks are piped to the fuel pump, and a six-way valve is provided by which the fuel to the mixers is controlled, and can be changed from gasoline to oil, or oil to gasoline at the option of the operator.

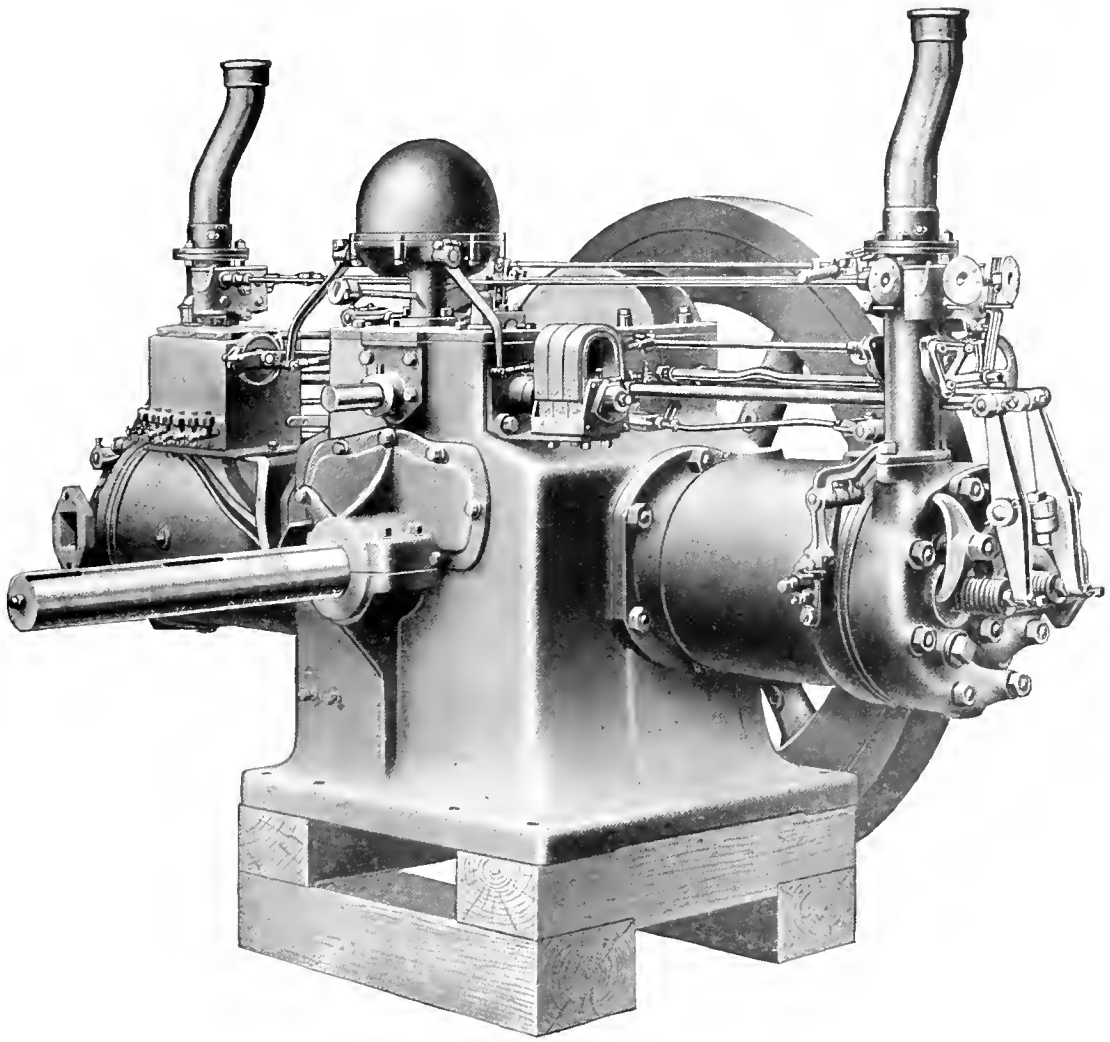


Governor with cap removed

Engine Control—Conveniently located are four valve handles, two of which control the fuel and water on the forward mixer, and two of which control the fuel and water on the rear mixer, so that it is not necessary to leave the operator's seat to adjust the forward mixer. On the left of the rear mixer is a quadrant and handle for controlling the spark, and on the right of the rear mixer is a quadrant and handle which operate on the governor for controlling the engine speed.

A compression relief cam, operated by a small lever, is provided for releasing part of the compression for starting.

(Description of 30-60-H. P. Tractor Continued)



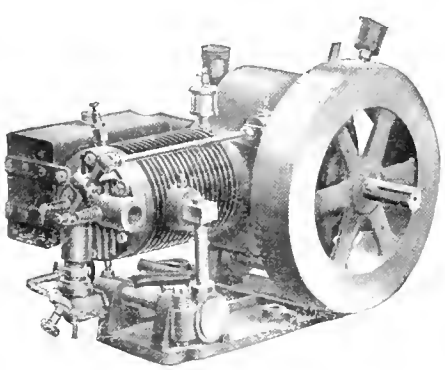
Mogul 60-H. P. power plant

Lubrication — A six-feed mechanical oiler lubricates the crank shaft bearings, the connecting rods, and cylinders. This oiler is of the force-feed type, being driven by an eccentric from the cam shaft. The bearings are thus supplied with sufficient lubricating oil; at the same time, none is wasted.

Starting — The difficulty usually encountered in starting a large engine, especially in cold weather, is entirely overcome on the Mogul 30-60-H. P. tractor by the Mogul 4-H. P. starting engine, located on the frame just forward of the flywheel. This little engine relieves the operator of all the labor of turning over the heavy flywheel by hand against partial compression that is necessary on other tractors.

(Description of 30-60-H. P. Tractor Continued)

Location of starting engine



Gasoline starting engine

Traction engine operators located in the northern latitudes will appreciate this very desirable feature, as even in mid-summer at the usual starting time, early in the morning, the atmosphere is quite chilly, which makes it difficult to warm up the ordinary type of oil tractor.

Starting Engine—The Mogul starting engine is a complete little power plant in itself, equipped with its own gasoline tank and battery box. It is of the four-cycle type of design, air-cooled, with an enclosed crank case. Jump spark ignition is used, the current being furnished by batteries and a jump spark coil. The gasoline tank holds one gallon and is mounted on brackets from the cylinder. The pulley is a small friction wheel, 3½ inches in diameter, with a 5-inch face.

The engine crank case is hinged on a shaft to the base. The cylinder is fastened to the base by means of an eccentric bearing. The bearing is operated by a hand lever so that when it is rotated, the cylinder is tilted a short distance and the friction pulley bears against the tractor engine flywheel. This little engine, although only rated at 1-H. P., will develop over double its rating. It is clamped to the tractor frame with six clamps and can easily be removed and used for other work around the farm.

Method of Starting—For starting, the six-way cock are set for gasoline and the compression relief cam on the large engine is thrown in, and the small starting engine is started and allowed to run free for a minute till up to speed, then the lever rotating the eccentric bearing on the starting engine is pulled up till the friction pulley is pressed against the large engine flywheel. This rotates the large engine at a sufficient speed for starting and the mixers can be adjusted at leisure. When the large engine starts, the starting engine is tilted back and stopped. (This engine can be furnished on special order at extra cost for the 15-30-H. P. tractor and a starter of somewhat similar design can also be furnished for the 12-25.)

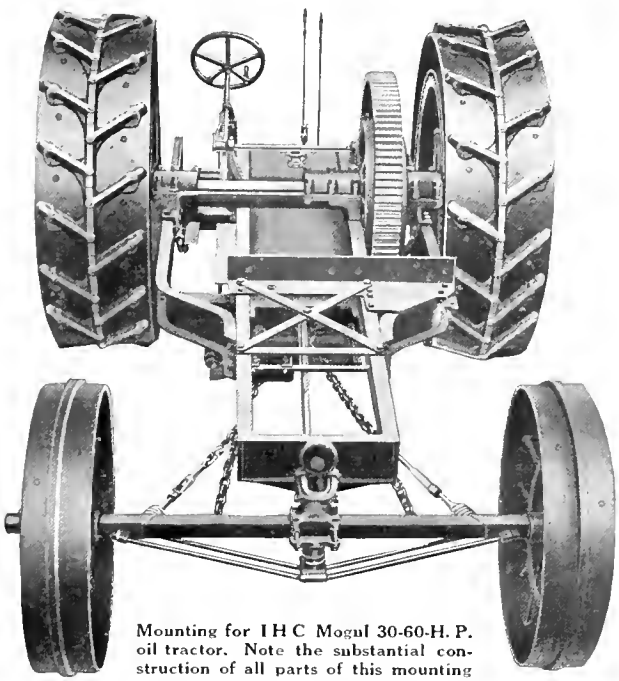
Truck—The truck consists of a heavy steel channel frame, continuous from front to rear, re-enforced by a heavy one-piece casting in the rear, which carries the main axle bearings and the countershaft bearings and a heavy casting in front. The channels are also securely braced near the center where the engine is placed. The weight on the frame is so distributed that the maximum tractive power is produced and the center of gravity is kept very low.

Front Axle—The axle is of square bar steel trussed underneath and fastened to the frame by a ball-and-socket joint, which allows liberal movement in all directions.

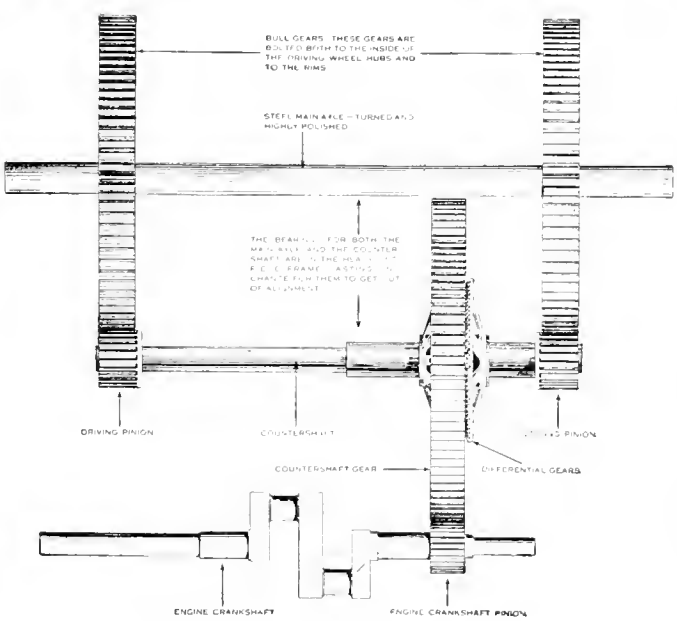
This axle is so arranged that when the tractor is being used for belt work a low belt can be used if necessary without interfering with the wheel.

MOGUL

(Description of 30-60-H. P. Tractor Continued)



Mounting for I H C Mogul 30-60-H. P. oil tractor. Note the substantial construction of all parts of this mounting



Plan view of double gear drive on 30-60-H. P. tractor

Rear Axle—The rear axle is a live axle. It is of turned and polished shafting, made exceptionally heavy, and turns in long bearings lined with a special anti-friction metal. The bearings are supplied with lubricating oil by a mechanical force-feed oiler, so that they are always thoroughly lubricated.

Drive Wheels—The drive wheels are 73 inches in diameter with a 24-inch face. The hubs are single castings. These drive wheels are well lugged and provision is made for attaching extra lugs. A 12-inch tire extension is furnished on special order.

Gears—Power is transmitted to the drive wheels from the countershaft by two sets of pinions and gears. The pinion on the crank shaft drives the differential gear on the countershaft, and the two pinions on the ends of the countershaft drive the large gears on the drive wheels. In this way, power is equally distributed to both drive wheels. The crank shaft pinions and large differential gear are cut to insure maximum wearing qualities. The countershaft and main axle are secured to the frame by the heavy bearing casting. Particular attention is called to this construction, because it insures such rigidity that the gears can never get out of alignment and cut. A good shield is provided for all gears. Oil is supplied to the bearing by a special five-feed mechanical oiler and to the bull gears by two large oil pots.

Removable Differential Pinions—The differential pinions may be removed and replaced without removing or disturbing any other parts.

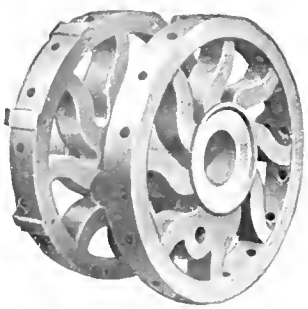
Friction Reverse—The friction reverse makes it possible to throw the reverse while the engine is moving without danger of stripping the gear teeth. It also eliminates an intermediate gear.

Clutch—Only one friction clutch is used to transmit power from the crank

(Description of 30-60-H. P. Tractor Continued)

Countershaft gear showing one-half of differential

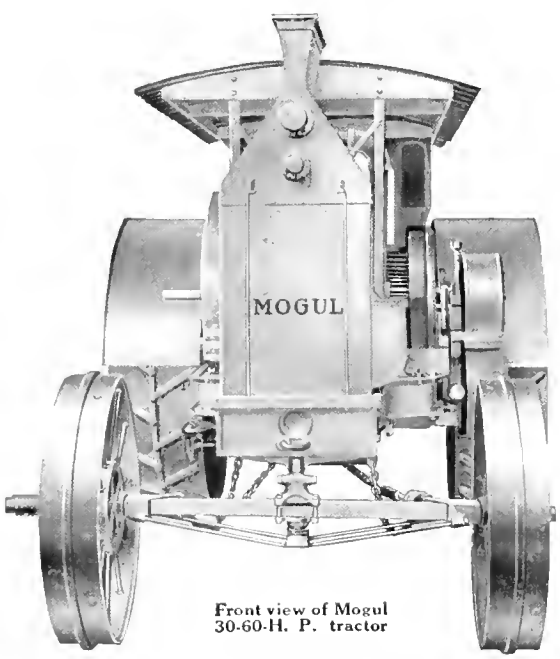
shaft to the gears. This clutch has three shoes with large friction block facings which engage the metal surface of the pulley. There is no danger of breakage, because the large coiled springs, one of which is placed behind each clutch shoe, take up sudden jerks and permit the gears to be started slowly, no matter how suddenly the clutch is thrown in.



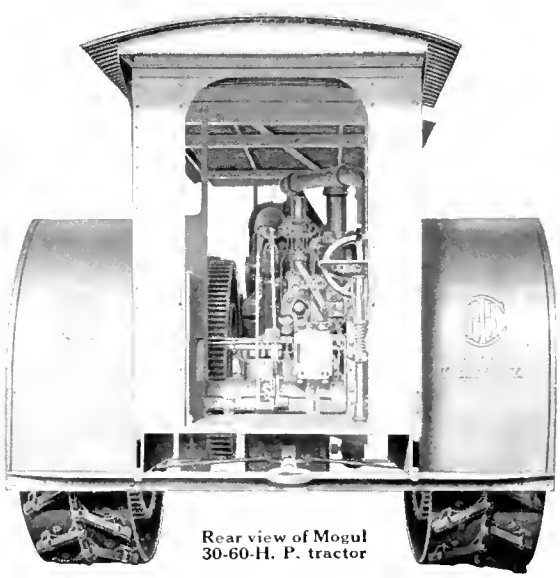
Note the substantial rear hub

Operating Levers—There are two operating levers, one for forward speed, and one for reverse. These levers are located within easy reach of the operator. The brake pedal is located just below the steering wheel.

Cab—A steel cab covers the operator's platform. It is provided with waterproof side curtains so that it can be completely enclosed if desired. A spring seat is also provided for the operator's convenience.

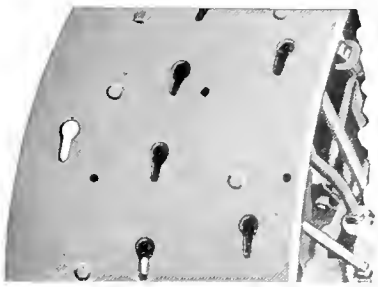


Front view of Mogul 30-60-H. P. tractor



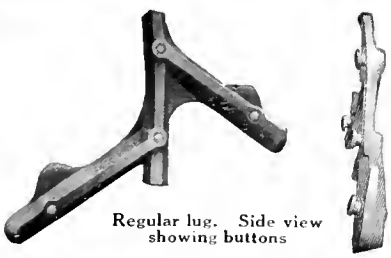
Rear view of Mogul 30-60-H. P. tractor

Special Tire Equipment for Mogul 8-16, 12-25, 15-30, and 30-60-H. P. Tractors



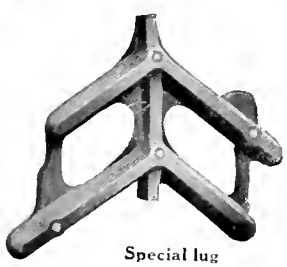
Section of Mogul rear wheel

Rear Wheels—Mogul 12-25, 15-30 and 30-60-H. P. tractors are equipped with tires punched with five rows of holes for lugs. The two outside and center rows are punched in the shape of button holes. Three types of lugs are made with buttons to fit these holes. The buttons on the lugs are pushed through the large part of the hole in the tire and then slipped back into the small part of the hole. All but one of the lugs on each rear wheel can be put on or taken off without tools. The last lug is bolted to keep the other lugs from slipping out of their button holes. This enables the operator to use the type of lug best suited to the work without removing and replacing one hundred or more bolts. The other two rows of holes are for the regular bolts on the sand and ice lugs.



Regular lug. Side view showing buttons

Regular Lug—The regular lug is 1¾ inches high, and has a center bar with alternate bars on the side. Thirty-two lugs are required for a set for the two rear wheels on the large tractors. These lugs are shipped with tractor unless otherwise specified.

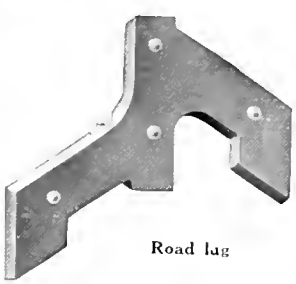


Special lug

Special Lug—This lug gives a better grip than the regular lug. It has the center bar with double the number of side bars. Thirty-two lugs are required for a set for the two rear wheels. Not furnished for the 12-25-H. P. tractor or 8-16.

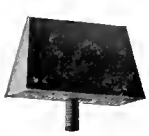
Sand Lugs—These lugs are for use when traveling in sand. They can be used at the same time with any of the button lugs. They are 3⅞ inches high, with a chisel point 5 inches wide. Sixteen are required for a complete set for both wheels on the large tractors and 24 on the 12-25 tractor.

Ice Lugs—These lugs can be put on at the same time with any of the button lugs. They are 3½ inches high. Thirty-two are required for a complete set for both wheels on the large tractors.



Road lug

Road Lug—When traveling on paved roads or for highway use, this is a good lug to use, as it does not tear up the road. It is 1¼ inches high, with a face 4⅜ inches wide. Thirty-two lugs are required for a complete set on the large tractors, 48 on the 12-25 and 32 on the 8-16.

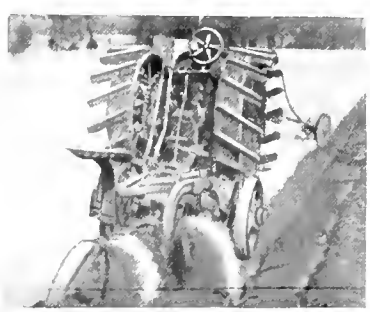


Sand lug

Ice lug

8-16-H. P. Angle Lugs—Special angle lugs extending over the side of the wheel for use on soft ground can be furnished on special order at extra cost. The set complete consists of 32 pieces. The complete set weighs 325 lbs.

Ice Lugs (Front Wheels)—These are the same as the rear wheel ice lugs, except they are made to fit the smaller curve of the front wheels.



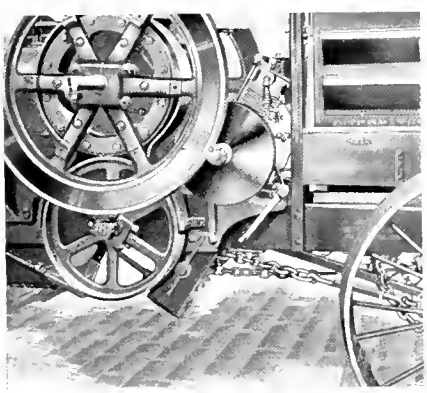
Special angle Mogul 8-16-H. P. lugs

MOGUL

Special Pulleys for Mogul Tractors

Plain Pulleys		Friction Clutch Pulleys						Friction Clutch Pulleys							
	8-16 H. P. Tractor		8-16-H. P. Tractor			8-16-H. P. Tractor			15-30-H. P. Mogul and 30-60 H. P. Mogul Tractors				15-30-H. P. Mogul and 30-60-H. P. Mogul Tractors			
Diameter Inches	Face In.	Diameter Inches	Face In.	Pulley only no Carrier		Diameter Inches	Face In.	Pulley only no Carrier	Diameter Inches	Face In.	Pulley only no Carrier	Pulley comp. with Carrier	Diameter Inches	Face In	Pulley only no Carrier	Pulley comp. with Carrier
8	8	16	8½	G 974		24	9½	G 925	*20	11	566 T	2617 T	30	16¼	598 T	2670 T
12	10	16	12½	G 7175		24	10½	G 880	*20	12	591 T	2663 T	32	11	565 T	2596 T
16	10	18	8½	G 950		24	12½	G 7595	*22	11	594 T	2666 T	32	13	599 T	2671 T
16	12½	18	10½	G 922		26	9½	G 926	*24	11	559 T	2597 T	*34	11	560 T	2599 T
20	16¼	18	12½	G 7734		26	10½	G 881	24	11	559 TA	2597 TA	*34	12	592 T	2664 T
22	14¼	20	8½	G 973		26	12½	G 7843	*24	14	596 T	2668 T	---	--	--	-----
24	14¼	20	10½	G 878		28	9½	G 953	*26	11	590 T	2662 T	--	--	--	--
24	16¼	20	12½	G 7285		28	10½	G 882	28	11	551 T	2598 T	--	--	--	--
26	12¼	22	9½	G 924		28	7½	G 445	28	13½	597 T	2669 T	--	--	--	--
26	16¼	22	10½	G 879		--	--	-----	28	16¼	587 T	2659 T	--	--	--	-----
28	16¼	22	12½	G 7846		--	--	--	30	12	577 T	2618 T	--	--	--	--

* Not furnished for 30-60-H. P. Tractors



Mogul 15-30 Starter

Mogul 8-16 Steering Device

Motor Starters — The Mogul 12-25 and 15-30-H. P. tractors can be equipped on special order with a motor starter somewhat similar to the starter furnished regularly on the 30-60-H. P. tractor. These starters can also be attached to tractor in the field.

Front Wheel Extensions — Front wheel extension tires can be furnished on special order at extra cost as follows: 12-25-H. P. 5-inch. 15-30 and 30-60-H. P. tractors 5-inch weight per pair, 268 lbs.

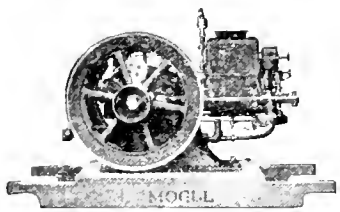
Slip-Over Tires — These tires can be had at extra cost on special order for 15-30 and 30-60-H. P. tractors, and are designed to eliminate the center bead. They are ¾ of an inch high and 4 inches wide, and are slipped over the front wheel tires and bolted flush with the center head so the tractor can be run on pavements, etc. 15-30-H. P., 231 lbs., and 30-60-H. P. tractors, 251 lbs.

Rear Wheel Extensions — Rear wheel extensions can be furnished on special order at extra cost as follows: 8-16-H. P. tractor 5-inch, weight per pair 400 lbs., 12-25-H. P. tractor 6-inch or 12-inch, 15-30 and 30-60-H. P. tractors 12-inch.

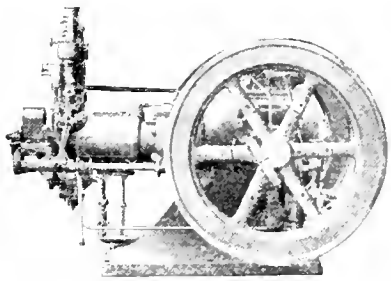
Special Road Wheels — Special heavy road wheels can be had on special order at extra cost as follows: 8-16 rear only, weight 1,000 lbs., 12-25 front and rear, weight 2,612 lbs., 15-30 and 30-60 rear only, weight 4,960 lbs.

Head Lights — On special order at extra cost, head lights for tractors can be furnished as follows: 12-25 and 15-30 kerosene head light, 15-30 and 30-60 acetylene gas head light with adjustable bracket for mounting in cab.

Steering Device — On special order at extra cost a self-steering device can be supplied for the 8-16-H. P., 12-25-H. P. and 15-30-H. P. tractors. This steering device relieves the operator of the labor of steering when plowing and enables him to watch the plows more closely.



Mogul hopper-cooled skidded engine



Mogul tank-cooled stationary engine

You Can Get Mogul Engines in all Sizes and Types to Operate on

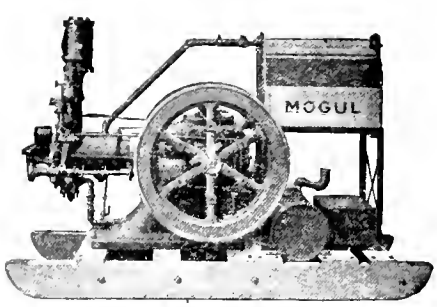
Kerosene, Distillate, Solar Oil, Gas Oil Motor Spirits, Gasoline, or Naphtha

MOGUL engines are made in all the popular sizes in both tank and hopper-cooled types so that you can get a Mogul to suit your individual needs. If you are not sure what size or type of engine will be the most satisfactory for your conditions of service, write us and we will be glad to give you the benefit of our experience.

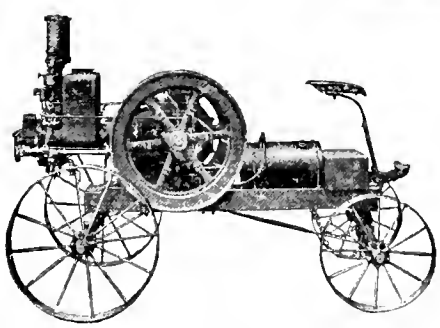
The tank-cooled type is made in stationary style, 4, 6, 8, 10, 12, 15, 20, 25 and 50-H. P. sizes; skidded style, 4, 6, 8 and 10-H. P. sizes; mounting style, 4, 6, 8, 10, 12 and 15-H. P. sizes; portable style, 4, 6, 8, 10, 12, 15, 20 and 25-H. P. sizes.

The hopper-cooled type is made in stationary style, 4, 6, 8 and 10-H. P. sizes; skidded style, 1, $1\frac{3}{4}$, $2\frac{1}{2}$, 4, 6, 8 and 10-H. P. sizes; portable style, 4, 6, 8 and 10-H. P. sizes.

SPECIAL CATALOGUE WILL BE FURNISHED ON REQUEST



Mogul tank-cooled skidded engine



Mogul hopper-cooled portable engine

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